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FIRE ENGINEERING

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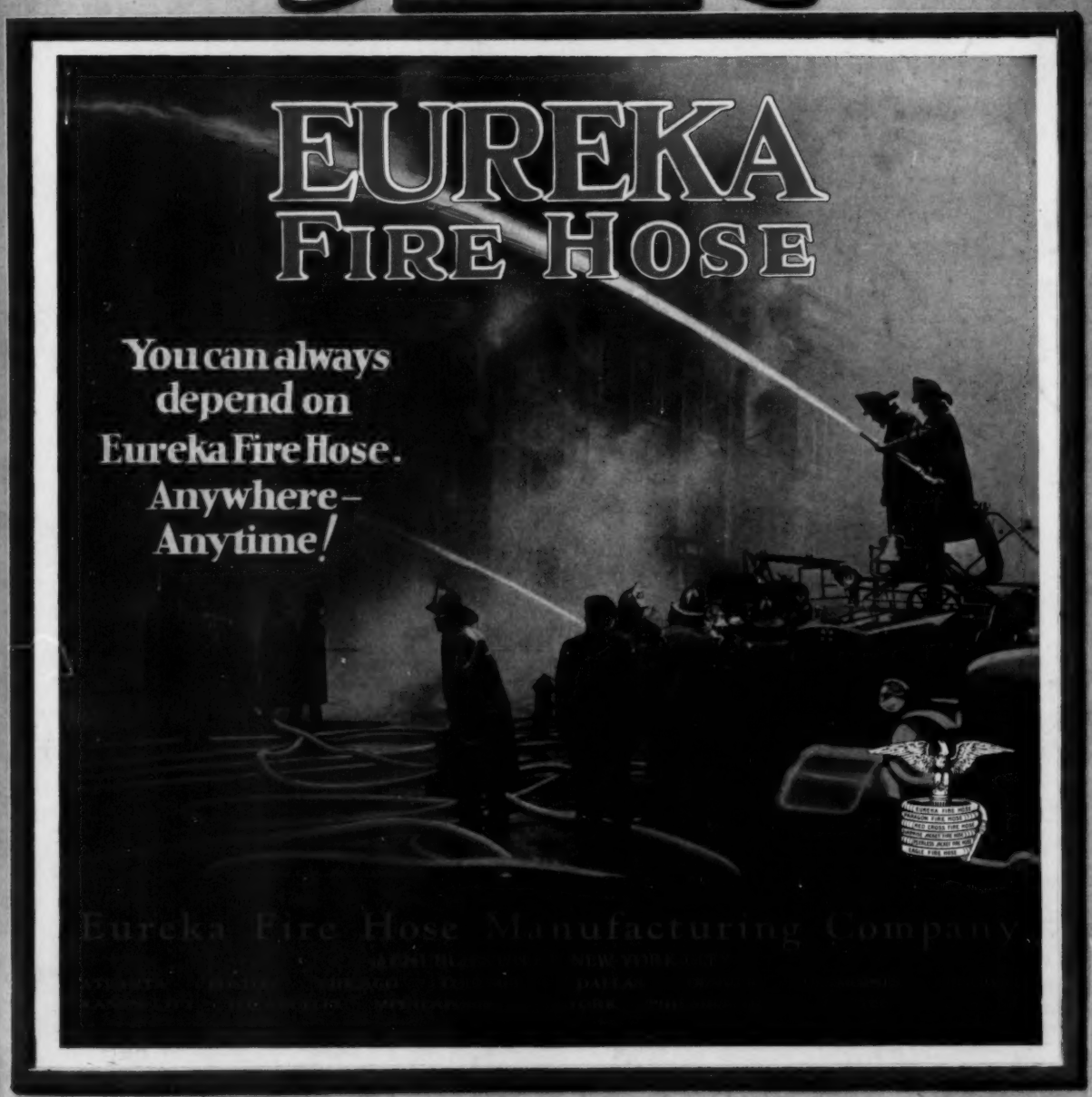
The Journal of the Fire Protection Profession

NOVEMBER 12, 1930



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FIRE ENGINEERING

A Consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER

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¶ While there are not left any subscribers who have gotten the paper since the first issue, although many fire chiefs have been on our list for the past thirty years or more, we are proud of the fact that one of our original advertisers, the Eureka Fire Hose Co., is still with us, and going stronger than ever.

¶ If we make as much headway in the next fifty-three years as we have the past,—we'll have reason to be happy indeed.

The Publishers

CONTENTS

VOL. LXXXIII No. 23

November 12, 1930

When Are Fire Preventive Ordinances and Regulations Valid? by Leo T. Parker 961
Complex Modern Conditions Require Such Laws—Powers of Fire Department Officials Defined.

Advantages of Salvage Work Performed by Municipal Department, by Chief Richard L. Smith (Portrait) 963
Great Saving of Property is Sure to Result—Work has Good Influence on Entire Personnel.

Caution Is The Prime Essential in Handlnig of Fire In Explosives (Illustrated) 965
Never a Certainty as to What Will Happen—Some Explosives Safe, while Others are Hazardous

The Round Table 967
What Type Programs Would You Suggest for Monthly Fire Company Meetings? What Are the Subjects Discussed? Are Drills Held at This Time?

With the Editor 969
Comments on Current Events and Live Topics by Our Editorial Staff

Questions and Answers 971
Replies to Questions on All Manner of Subjects on Fire Fighting and Fire Prevention.

Recent Important Fires Specially Reported (Illustrated) 973
Coal Pocket Fire at Providence, R. I.—Burnings of Two Weeks.

Fire Department Activities 983
Newsy Notes from All Over the Country with Matters Firemanic.

Fire Department Improvements 984
Record of Business Activities in the Fire Protection Field.

False Alarms 990
Humorous Side of the Fire Protection Profession.

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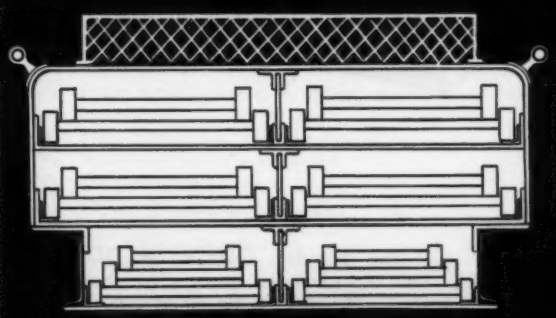

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   (b) Grounded circuit
   (c) Box short circuited
   (d) Entire circuit shunted out
   (e) Circuit open and grounded
   (f) Circuit open and box short circuited
   (g) Circuit open and entire circuit shunted out.
2. PERMITS FULL ALARMS TO BE RECEIVED FROM ALL BOXES EXCEPT THOSE BETWEEN "TROUBLES"—UNDER THE FOLLOWING COMPLICATED CONDITIONS:
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(1) From hand-driven to weight-driven clock-work movements.
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Despite all of these important improvements in the box, Fire Chiefs and Superintendents of Fire Alarm have for years looked forward to the time when there would be further development that would reach out beyond the box to eliminate the hazards of loss of alarms from broken or grounded circuits. Such conditions, resulting from street accidents, heavy winds, and sleet storms, always have been a source of worry to those in charge of fire alarm systems.

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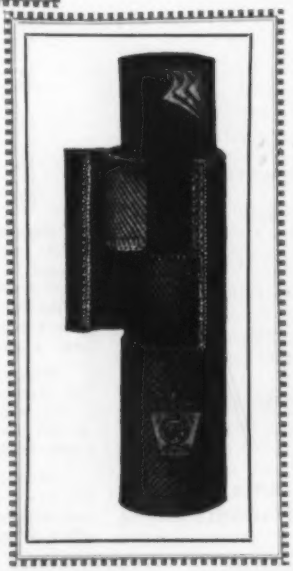

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FIRE ENGINEERING

(A Consolidation of Fire and Water Engineering and The Fire Engineer)

The Journal of the Fire Protection Profession

VOLUME LXXXIII NOVEMBER 12, 1930 NUMBER 23

When are Fire Preventive Ordinances and Regulations Valid?

Complex Modern Conditions Require Such Laws—Must Conform to the Constitution—Powers of Fire Department Officials Defined

By LEO T. PARKER, Attorney-at-Law

THE problem of zoning cities and towns in the interest of health, morals, safety, or general welfare of the public, particularly for the purpose of reducing fire hazards, is among the most important of the many problems of municipalities.

Although it is not generally known, building zone laws are of modern origin. They began in this country only 25 years ago. Until recent years, urban life was comparatively simple, but, with the great increase and concentration of population, problems have developed which require restrictions in respect of the use and occupation of private lands in urban communities, and the kinds of buildings which shall be constructed in congested districts.

Regulations, the wisdom, necessity, and validity of which, are so apparent that they are now uniformly sustained, a half century ago probably would have been rejected as arbitrary and oppressive. Such regulations are sustained, under the complex conditions of our day, for reasons analogous to those that justify traffic regulations, which, before the advent of automobiles and rapid transit street railways, would have been condemned as fatally arbitrary and unreasonable.

Frequently, the validity of zoning laws, which in many instances delegate authority to fire officials to restrict, or even prevent further use and occupancy of certain types and kinds of buildings, often is contested on the grounds that such regulations violate the United States and State Constitutions.

However, while the meaning of constitutional guarantees never varies, the scope of their application must expand or contract to meet the new and different conditions which are constantly coming within the field of their operation. In a changing world it is impossible that it should be otherwise.

On the other hand, although a degree of elasticity is thus imparted, not to the meaning but to the application of constitutional principles, statutes and ordinances which are found clearly *not* to conform to the Constitution, of course, are void.

Therefore, the question whether the power of Fire Department officials exists to forbid the erection of a building for a particular use, or whether an old building shall be abandoned, is to be determined not by an abstract consideration of the building or of the thing considered apart, but by considering the building in connection with the circumstances and the locality.

For the reason that the validity of each decision or regulation is dependent upon the peculiar circumstances a review of the most recent and leading higher court cases on this subject probably will impart desired information, and illustrate various important phases of the law, better than mere explanation.

Validity of Ordinance

Generally speaking, it has been held that a municipal fire preventive ordinance is valid and enforceable if it is designed to promote the morals, health, safety, welfare and prosperity of the community. Obviously, the fact that some property owners are likely to suffer financial loss resulting from enforcement of the ordinance does not render the law invalid. The important question is: Will enforcement of the ordinance benefit the majority of the citizens?

For instance, in the late case of State vs. Hillman, 147 Atl. 294, the validity of an ordinance was adjudicated which authorized the Board of Commissioners to prohibit, if it desired to do so, the reconstruction of a building partly destroyed by fire.

A property owner who was prevented by the Commission from reconstructing his building appealed to the higher court on the contention that the ordinance was unreasonable and void. It is interesting to observe that the court upheld the validity of the ordinance, saying:

"All property is held subject to the right of government to regulate its use in the exercise of the police power, so that it shall not be injurious to the rights of the community, or so that it may promote its health, morals, safety and welfare . . . Regulations of this character, reasonably applied, will promote the morals, health, safety, welfare and prosperity of the community for which they were adopted and aid in its community development."

In another case (13 S. W. (2d) 628) a property owner contested the validity of a municipal ordinance which prohibited conduction of garages under hotels, apartment buildings, and the like. It was contended that, since the building was strictly of fireproof construction the enforcement of

"The question whether the power of Fire Department officials exists to forbid the erection of a building for a particular use, or whether an old building shall be abandoned, is to be determined not by an abstract consideration of the building or of the thing considered apart, but by considering the building in connection with the circumstances and the locality."

the law would be an example of unreasonable and oppressive authority. However, the higher court held the ordinance valid, stating the following important law:

"The question which is presented for our consideration and decision is whether the ordinance in question is fairly referrable to the police power of the municipality, and whether the expressed requirements or regulations of the ordinance have a substantial and rational relation to the health, safety, peace, comfort and general welfare of the inhabitants of the municipality. . . . The safety of life and property as against the ravages of fire has always been a live question in municipalities. The city government has to deal with the question not from the standpoint of the individual owner of a particular property, but from the standpoint of the general welfare of the city and its citizenship. Ordinarily, the citizen has the right to use that which is his own, in such a manner as he pleases, but if the use thereof seriously affects the general public, the laws demand a surrender of a part of the individual rights for the general welfare of the public."

Constitutional Rights Are Affected

In many instances the validity of fire preventive ordinances have been contested on the grounds that such laws violate the Fourteenth Amendment of the United States Constitution which provides that no state "shall deprive any person of life, liberty or property without due process of law, nor deny to any person within its jurisdiction the equal protection of the laws."

Usually, the law is valid if it is reasonably adopted to benefit the majority of the citizens, although apparently it violates the above section of the United States Constitution.

In the leading case of San vs. San Francisco, 105 Pac. 609, it was disclosed that a city enacted an ordinance prohibiting the conduction of various fire hazardous businesses in a hotel or restaurant. The property owner contested the validity of the ordinance on the grounds that it violated the Fourteenth Amendment to the United States Constitution, but the court upheld the validity of the law, saying:

"The police power is very broad and comprehensive, and is exercised to promote the health, comfort, safety, and welfare of society. . . . Under it, the conduct of an individual and the use of property may be regulated so as to interfere, to some extent, with the freedom of the one and the enjoyment of the other."

Unreasonable Laws

On the other hand, any law of this nature is invalid if the testimony indicates that it is unreasonably severe and unnecessary to protect the majority of the citizens and their property against injury and destruction by fire.

Moreover, certain kinds of ordinances, and other building regulations, may be held invalid for the reason that the United States Constitution clearly provides that all laws and regulations are void which impair the obligations assumed by contracting parties under valid agreements.

For example, in the leading case of London vs. Robinson, 271 Pac. 921, the testimony indicated that an owner of a lot, after securing a building permit and adopting plans and specifications, entered into a contract with a contractor for the erection of a building. Suit was filed against the owner and the contractor to restrain the latter from proceeding with the erection work on the contention that the building would violate the terms of the city ordinance.

During the trial it was proved that at the time the permit was issued it did not violate the ordinance then in effect, but afterward an amendment to this ordinance was enacted which made it unlawful for the owner or the contractor to erect the proposed building.

It is interesting to observe that although the lower court held the amended ordinance effective and enjoined the owner from completing the building, the higher court reversed this verdict and quoted the law on the subject, as follows:

"Zoning regulations ordinarily have no retroactive effect. . . . By force of statute or ordinance zoning regulations may not have the effect of revoking permits for buildings granted prior to their adoption."

Of course, a property owner, who places himself in a compromising position, may not resort to protection of the law to the same extent as persons who come into court "with clean hands." So held the higher court in the recent case of Scott vs. Champion Co., 28 S. W. (2d) 178.

In this case it was proved that a property owner began erection of a gasoline filling station in violation of an existing ordinance. After the construction work was begun the old ordinance was repealed and a new ordinance was passed which prohibited the construction of gasoline filling stations within 100 feet of a residence.

Suit was filed to prevent the property owner from completing and operating the station on the contention that its operation would violate the present ordinance and, further, that practically all the residences in the block are of wooden structure and that the location of the gas station upon the lot and the danger of explosion and fire from the handling of oil and gas, and other highly combustible material at the station, would subject all houses in the block to conflagration and possible destruction.

The property owner argued that since he had begun erection of the filling station after the last ordinance was enacted its enforcement would be retroactive and therefore illegal. However, in view of the facts the court refused to hold this ordinance retroactive, saying:

"Obviously this section forbids a retroactive effect being given the ordinance, and was evidently designed to protect, from financial loss, those who, prior to the adoption of the ordinance, had begun the construction, or had planned and secured a permit for the construction of a building for a designated use. But this provision protects the innocent, that is, one who legally and rightfully began, or planned, the construction of a building for a designated use, prior to the effectiveness of the ordinance or an amendment thereto, but we do not think one can claim immunity under this provision who, in doing these things, acted in defiance of a valid ordinance."

Municipality May Revoke Permits

A municipality, or its proper officials, may without liability revoke a building permit. This is true because a city is not liable for damaging or negligent acts of its officials attached to a governmental department.

For illustration, in James vs. City of Toledo, 157 N. E. 309, it was shown that a city commissioner without justification or good cause revoked a building permit after the owner had expended considerable money and commenced the construction work. The owner filed suit against the city to recover damages amounting to the expenses incurred. It is interesting to observe that the court refused to allow damages, stating important law as follows:

"If the city in what it did was acting in a governmental capacity, such liability would not arise. This non-liability in damages for governmental acts of municipalities has long been established and is a fundamental principle of the law. The matter of issuing and revoking building permits is clearly an exercise of such power, as has often been held. . . . The exercise of power by a municipality, under a valid ordinance, to grant or refuse a building permit or license, is a governmental function, for which the city cannot be held in damages. In thus acting, the city was a representative of the state, and for this reason it was held there was no liability in damages."

Also, in another recent case, Urban vs. Board of Adjustment, 142 Atl. 364, it was disclosed that a property owner, desiring to erect a building, submitted plans and specifications to the proper municipal officials who approved and issued a permit.

The owner, relying upon the force of the permit, entered into a contract with a contractor who began the construction of the building. Later a municipal committee revoked

(*Continued on page* 987)

"Electric Eye" Discovers and Extinguishes Blaze

An electrical apparatus has been developed by the Westinghouse Manufacturing Company and is popularly called the "electric eye." It was demonstrated at an engineering society meeting held in New York City. The sensitive globe reacts to light, as it sweeps back and forth and downward. As soon as the globe sights the blaze it stops and immediately releases a fire stream. As soon as the blaze disappears it resumes its endless quest for more fires.

Advantages of Salvage Work Performed By Municipal Department

Great Saving of Property Is Sure to Result — Work Has Good Influence on Entire Department Personnel

By CHIEF RICHARD LEE SMITH, Fire Department, Pittsburgh, Pa.

THE following paper presents some very clear and very well thought out arguments in favor of the municipal Fire Department performing salvage work as a regular part of its routine duty:

Due to the fact that some nice things have been said about the salvage activities of the Fire Bureau of our city, it will be, perhaps, interesting to know how it came about, and that it was made possible to install a Salvage Unit in the Fire Department of a large city, have it paid for by the city, and placed under the direct supervision of the Chief of the Department.

Chief Richard L. Smith

For years the word "salvage" seemed to be a sort of "bugaboo" to most of the people and officials concerned, who were actively interested in the work of our Fire Department. Without due and just consideration being given the subject either by our then chiefs or by the municipal officials, but mostly due to the fact that salvage operations were conducted and paid for by the insurance interests in other cities of our country, it was a difficult problem for any Fire Chief to "sell" his ideas of "salvage" no matter how much he was sold on the work himself.

Emergency Squad Wagon Becomes Salvage Corps Truck

However, realizing the growing and vital need of this work, it was up to us, as just one more obstacle to be overcome, to find some way, with the least friction, to install it and I found the way. A rather large order for new apparatus was being placed a few years ago and in this order was included an Emergency Squad Wagon for service in the high-value or downtown district, with sufficient men added to the force to man it. It was intended to carry and does carry all the manifold and necessary equipment used in Emergency Squad Work, but—I had previously made provision in the building of it to carry at least 50 or 60 salvage covers, 1 dozen squeegees, 25 sprinkler-head replacements, scoop-shovels, lights, saws, augers, folding-ladders, flood-lights, tar-paper, hammers, nails, etc., in fact all necessary salvage equipment. Picked men were assigned to it and in the meantime I had appealed to my good friend Chief Frank McAuliffe, of the Chicago Fire Insurance Patrol, for help, asking him to make provision for the training of the officers and men of this outfit and including our two training school instructors. Chief McAuliffe's superiors, on being notified of our request, readily granted it, and when the squad wagon was placed in service Chief McAuliffe and his assistant, Chief Riley, came to Pittsburgh to train our men. Assistant Chief Riley stayed with us for several weeks and certainly did a wonderful job, rolling out with the boys on all calls, and at quarters and at the Training School initiating the men in the work of salvage in all its manifold branches.

Work at First Fire Saves Cost of Apparatus

One thing, among many others, that made me feel rather proud of our boys, was the fact that although the work of this squad is rather strenuous, being termed a "work-house" job, there was and there is at present, keen competition for places in this outfit. Within twenty-four hours of its installation we had a four-alarm fire and, by the service they rendered, saved at this one fire alone, not only the cost of their new apparatus and equipment but the amount of their salaries for a year as well.

In fact during the rest of the year (8½ months) they saved property conservatively estimated in value at nearly a half million dollars, property or merchandise that without this service would probably have been a total loss. And please remember that the losses or rather the estimates on property, etc., saved by our salvage work are not based on our own figures, but on those furnished us by the firms and people receiving this service, who after all, being human and in dealing with the insurance companies carrying them, are rather prone to minimize the amount saved rather than exaggerate the figures furnished us.

Hard to Place Monetary Value on Service

In numerous cases no monetary value can be placed on this service. For instance I have letters in my office files that certain firms would have been crippled and unable to do business for from three to six months and even longer if it had not been for our Salvage Work in saving certain things, such as perishable records, blue-prints, and other such necessities to their business that are practically irreplaceable, at least for a period of time. And right here let me digress just a bit, to further clinch my argument as to the merits of Salvage Work, in regard to just such cases. Although those firms were fully covered by insurance, as to building, stock, fixtures, etc., yet their real and vital loss would not have been taken care of by such insurance and their business would have suffered seriously if it were not for the service we rendered.

Salvage Work Made Part of Training School

As a result of the instant success of this crew's activities, and having had our Training School Instructors grounded

"After our introduction of salvage methods, we noticed quite a change for the better in the morale and efficiency of our men all along the line. It had a tendency to stop the haphazard way of doing things, cutting out the unnecessary damage to doors, windows, floors and all other parts of buildings. To be brief, it toned up the efficiency of the whole force and put them on their mettle."

in this work, as I stated before, made the teaching of Salvage Work a part of the course of our Firemen's Training School, where every company in the city received the benefit of this training, and where for the last two months and at present we are putting 110 new substitute firemen through our school and who are being taught not alone the fundamentals of fire-fighting but the rudiments and practice of salvage methods as well. I then placed salvage covers and other salvage equipment on all hook and ladder companies in the city and on most all pumpers, particularly those who answer many "still alarms" in the suburban districts, unaccompanied by a hook & ladder, and in a short while I began to see the results.

Salvage Work Puts Force on Mettle

After all, any degree of success we Fire Chiefs might attain in our game can be attributed to "salesmanship," whether we realize it or not. It's applicable, whether the sale made is of merchandise, real estate, an automobile or fire service; and I know of no better or quicker way to sell your Fire Department to the citizens of a community than by salvage work performed efficiently by their firemen, for immediately after you will begin to see the congratulatory letters roll in by the dozen, complimenting the department on this work, which makes you feel rather good, particularly when received from poor people who carried no insurance or were unable financially so to do.

Just another fact, peculiar but true. After our introduction of salvage methods, we noticed quite a change for the better in the morale and efficiency of our men all along the line. It had a tendency to stop the haphazard way of doing things, cutting out the unnecessary damage to doors, windows, floors and all other parts of buildings. To be brief, it toned up the efficiency of the whole force and put them on their mettle.

Salvage Necessary to Efficient Department

As I stated before, I have placed covers, etc., on trucks and pumpers. Now some chiefs might argue they have not sufficient men for this work, in case of a going fire. In a few isolated cases this may be true and naturally where the services of all the men are absolutely needed in the saving of lives and extinguishment of a fire or preventing the spread thereof, salvage would have to go by the board temporarily. I am assuming, though, their companies are manned according to standard as required by the National Board of Fire Underwriters and I invite those Chiefs to just look around them at numerous fires, even going ones, and see how many men, after lines are in operation, who would in a great many cases be available for the placing of salvage covers and salvage operations. It is at least worth the effort on their part to investigate and study these matters, for whether they realize or acknowledge it or not, if they claim an efficient department, versed in modern methods of fire-fighting, they have been unconsciously practicing salvage methods to a certain degree.

To prove that is so, I might ask the following: For years have not the modern Fire Departments tried to reduce the losses from water at fires, in quickly as possible replacing the use of large lines at fires with lead-in lines? In sweeping water used in upper stories of buildings down elevator shafts and stairways, rather than let it soak through to lower floors? In the modern prevalent way of the use of chemical lines and booster lines to reduce water loss? In the use of Carbon Tetrachloride, Foam and CO_2 Gas as extinguishing agents? Sure they have. Well, to be consistent, why not admit it and carry it a little further, by installing and using covers and practice salvage methods fully, especially when they have nothing to lose and all to gain.

As to cost of installation in proportion to results obtained, I might best answer by saying a standard 12-foot x 18-foot Salvage Cover, costing approximately $20 or $22, will cover everything in the ordinary size room of a home. In business places just think of the value of certain stock that can be placed safely under a few salvage covers.

Opposition to Salvage as Fire Department Work Disappearing

I am prone to think that in past years our fire service suffered from too much "precedent" in some places. Established ideas or rather established ways of doing things, irrespective of whether they could be improved upon or not, had a tendency to put us in a rut, as it were. However, I am glad to note that of recent years opposition to the idea that salvage operations are really a part or rather a duty of a Fire Department's work is gradually disappearing, and that is mostly due to the fact that the individual Fire Chief of to-day is becoming progressive and the logical reasons for salvage are becoming better understood.

Squad Wagon Companies Transformed Into Salvage Corps

At this point I might mention a visit that was paid to me by a Chief and Fire Marshal of a large city, who were interested in the installation of salvage service in their Fire Department and intended to visit certain cities for data and cost concerning same. I happened to know they had a number of Squad Wagon Companies in service in their department ,and in the discussion as to ways and means they might employ, I mentioned to them that they already had at hand a tentative salvage outfit and with very little expense and trouble could gain the full advantages of salvage service; by adapting the beds of their Squad Cars to carry covers, adding the necessary small equipment and then train their men in the work and at very little expense they would have what they started out to get. I am happy to say they visited no further, returned to their home city and today that city has salvage service.

Fundamental Duty to Conserve Life and Property

All Fire Chiefs will admit their fundamental duty is to conserve life and property. For years we have talked about the enormous loss from water at fires. In fact, we Chiefs know that in a great many cases water damage constitutes up to 75% of the total loss at fires. Knowing this, why not deal with this problem in a constructive way. If we, as Chiefs, are going to allow property, household goods or merchandise of any kind to be ruined by water when it is within our power and ability to save them, then to be logical, why not just let them burn up. The resultant loss is the same. How often have we in the past had fires, for instance, necessitating the cutting of holes in the roofs of dwellings and business places, then leaving them uncovered after the fire was extinguished and have inclement weather conditions do more damage to the contents of those dwellings than the fire; when it would have been an easy matter to cover the openings made with roofing-paper or an old salvage cover, if necessary, until repairs have been made?

Salvage Can Avoid Huge Property Loss

If we, by neglecting to practice common sense salvage methods in the extinguishment of fires, fail to save that which we can from damage by water, etc., then I feel that such a Fire Department has not functioned as efficiently as it could or should in the performance of its duty, and that the people of those communities are suffering an unnecessary loss. And not alone a loss, but a great inconvenience, in some cases worse than the loss.

Oftimes with fires on the second floor or in the mansard of homes, where it necessitates the use of a large stream and causes water damages, nearly everything is ruined on the lower floors. Think of the inconvenience, plus the unnecessary damage, that occurs before a settlement of insurance is made and those things replaced that have been ruined. There are some things that money cannot replace, which to the owners may have a sentimental or historical value far beyond a monetary one. That is where salvage service counts. The same thing applies to business firms who have fires on the upper floors of their buildings. Irrespective of the loss entailed on the lower floors, covered by insurance as it usually is, think of the disruption to their business, pending settlement of damage claims and replacement of stock, etc. Again, that is where salvage service counts.

Great Aid in Inspections

Before closing there is one other fact brought to my attention by salvage work being done by a Fire Department and how it affects other duties of the firemen advantageously. For instance where the uniformed rank make inspections of buildings, they observe that stock or merchandise is skidded off floors three inches or over; proper aisle-ways are maintained; shelving kept from being built flat against walls; proper arrangement of cases, cabinets, etc. In fact, after being grounded in salvage work they are far better equipped to make intelligent inspections.

(Excerpts from a paper read before the annual convention of the Salvage Corps Officers Association of the United States and Canada, at Winnipeg, Can.)

Stanberry, Mo., to Buy Apparatus—Stanberry, Mo., voted to purchase Boyer fire apparatus.

A Notable Example of What Explosives Can Do

Although the various structures at the U. S. Naval Ammunition Depot at Lake Denmark, N. J., were placed well apart, and in many cases protected by hills between them, the larger part of the establishment was wrecked by fire or explosions. This illustration shows fire still burning at several points, and also the effect on several structures which were levelled by explosion or fire.

Caution is the prime essential in connection with

Handling Fires in Explosives

Never a Certainty As to What Will Happen—Some Explosives Are Comparatively Safe in Fires, While Others Are Extremely Hazardous

ONE of the best qualified explosives engineers in the country was recently asked what would be his procedure if he were in charge of the fire department and was called to handle a fire burning in a carload of dynamite. He answered: "I would get my men as far away from it as possible and in as short a time as possible."

The above answer may seem somewhat inconsistent when it is known that dynamite burns like grease when ignited.

On the other hand, conditions may develop in such a fire as described above which might cause the detonation or exploding of the dynamite. For instance, dynamite is exploded by a sharp shock, such as from a percussion cap, and occasionally from shock incidental to dropping. As it is well appreciated that in a course of a fire the dynamite might be subjected to a shock, the advice of the aforementioned authority would seem reasonable.

Many explosives are encountered by fire departments in their line of duty. Black powder, smokeless powder, dynamite, picric acid and other common explosives are available at almost any point in the country. For that reason a knowledge of their characteristics, and particularly when subjected to fire, is essential to the safety of the men.

While it is not intended that this article include all of the explosives now manufactured, and likely to be found in industries, it does cover some of the more common of them.

The following are included in this discussion: Gun powder (black powder), gun cotton (nitrocellulose), nitroglycerine, dynamite, blasting gelatine, TNT (trinitrotoluene), picric acid, fulminate of mercury and nitrate and chlorate explosives.

In the first place, an explosive may be defined as a solid or liquid substance, or mixture of substances, which is liable, on the application of heat or a blow to a small portion of the mass, to be converted in a very short interval of time into other more stable substances, largely or entirely gaseous. Considerable amount of heat is also invariably evolved and consequently there is flame.

Gun Powder: This was probably the earliest explosive used, and is credited to the Chinese. It is made of three substances mechanically mixed, namely saltpetre, sulphur and charcoal. In later years sodium nitrate was substituted in place of the saltpetre. Gun powder is detonated by igniting, and must be confined to an air tight space to produce its explosive effect. Due to the presence of sulphur, its ignition point is comparatively low.

Gun cotton (nitro cellulose): This is a yellowish substance and is both inflammable and explosive. It is soluble in a mixture of alcohol and ether; ethyl acetate; nitro benzene; benzol acetone, and other liquids. Its derivation is as follows: Hanks of cotton, free from impurities, are nitrated in mixed acids, removed from the acids, whirled in a centrifuge to remove as much acid as possible, washed in water until no acid reaction remains and finally boiled in several changes of water. It may be shipped in wooden boxes, and is commonly found in such containers. It is used as an explosive for torpedoes, production of cellodion, celluloid, smokeless powder (either alone or mixed with nitroglycerol, picrics, etc.). From the fire hazard standpoint it is considered very dangerous and due to the fact that shock may detonate it, it is a dangerous material to encounter at fires.

Nitro-glycerine: This is a pale yellow, thick, inflammable, explosive liquid. It weighs a little over 1½ times a like

quantity of water. It is manufactured by dropping glycerine into cooled, mixed acids and stirring, followed by repeated washing with water. It is ordinarily shipped in tin cans and is used as an explosive, and in the production of dynamite and other explosives, as well as certain medicines. It is very dangerous from the fire hazard standpoint, and is highly explosive. Shock may set it off, or it may be ignited by heating to a temperature of 500 degrees Fahr.

Dynamite: There are several kinds of dynamite, the most common of which is probably giant powder. This is made of nitro-glycerine, sodium nitrate, resin, sulphur, and kieselguhr. Other nitrates may be used and other substances substituted for the resin.

The Fireworks Factory Is a Frequent Sufferer

Due to lack of properly trained workmen, or safety measures which would prevent accident, the average small fireworks plant has more than its share of troubles. This picture shows some shacks at a fireworks plant at Chicago which was involved in an explosion. It is believed that rays from the sun were concentrated through a window pane on a fuse which ignited, causing the blast. Fire, which followed the detonation, practically destroyed the three outer buildings and part of the main plant.

Another type of dynamite commonly used is known as ammonium dynamite, but it does not keep as well as giant powder owing to the moisture absorbent characteristics of one of its ingredients. It is made of ammonium nitrate, paraffin, charcoal and nitro-glycerine. Other types of dynamate are made by varying the propositions of ingredients as well as substituting various ingredients.

Dynamite may burn like so much grease when ignited but it also presents the ever present possibility of exploding. For that reason it is particularly dangerous at fires. It may be stored in large quantities at the scene of building or excavating operations, and due to its universal use, it presents a serious problem to the city fire department.

Blasting gelatine: This explosive is made by dissolving collodion-cotton with nitro-glycerine, thus producing a gelatinous solid which, besides being safer than dynamite, is also much more powerful and convenient. As the name suggests, it is a gelatine-like mixture, and is easily handled.

TNT (trinitrotoluene): This is a yellow, crystalline substance, made by the nitration of toluol with mixed acids. It is shipped in iron cannisters and is explosive. Its fire hazard is severe. Hudson Maxim is quoted as saying that "When TNT catches fire it burns but does not explode," and it is said that he has shoveled some into his furnace to demonstrate.

But even though it does not explode upon burning, there is always a chance that a shock incidental to fire may cause it to detonate. When it does explode, it exerts tremendous force, and may do much more damage than other explosives noted above.

Picric acid: This is a very poisonous explosive, especially in contact with metal or metallic oxides. It comes in the form of yellow crystals. It is shipped in wooden kegs or boxes free from metal nails or screws. It is also shipped in iron barrels with special lining. It is commonly used in connection with the manufacture of explosives, dyeing silk, and the manufacture of medicine. It is a dangerous fire hazard but not so serious from the explosive hazard standpoint as some of the other explosives listed above.

Fulminate of mercury: This is a dark brown crystalline powder which explodes when dry under the slightest friction or shock. It is usually shipped in canvas bags in stone crocks filled with water and is used in the manufacture of caps and detonaters for producing explosion for military, industrial and sporting purposes. It presents a very severe fire hazard and is so explosive that it cannot be shipped by express.

Nitrate and chlorate explosives: Many explosives have been manufactured by using nitrate or chlorate as an ingredient. Nitrates may be of ammonium, potassium or sodium, while chlorate may be of potassium or ammonium. The chlorates and nitrates, while not inflammable, are serious hazards. When heated they evolve oxygen and increase the intensity of the fire. Ammonium nitrate, like sodium and potassium chlorate and nitrate, is also hazardous in this respect. Chlorates and nitrates are not hazardous when in solution in water.

When used in the manufacture of explosives, they are combined with other materials which may explode at a fire and for this reason they should, when in explosive combinations, be treated with the same care that dynamite is given.

Operating at Fires

Where explosives are encountered in large quantities at fires, the safest policy is to stay well away from the building so that in the event of them letting go, no lives will be lost. There are some instances, however, where close operations may be justified, such as the burning of quantities of picric acid or TNT. Here again is the question of whether or not life is more valuable than property. If life is at stake in a building or establishment wherein fire is burning among explosives such as dynamite and TNT, the department would be justified in operating at a fire in the usual manner until such time as those trapped are brought to safety. After this, the safest policy would be to keep at a distance until explosives have been destroyed by fire.

It is usual where explosives are employed in the city to have proper auxiliary fire protection in the building where they are stored. In this case the auxiliary equipment can be put into operation and the men withdrawn. This applies of course to sprinklers and perforated pipe systems. It is not necessary for men to be at hand to operate these.

Most cities have ordinances regulating the quantities of explosives to be stored within city limits, as well as the manner in which they are stored, so that possibility of a severe explosion is not serious in most instances. However, shipment of dynamite by way of railway cars through cities, often temporarily places a hazard under the jurisdiction of the fire department, and in such case the fire department is responsible in any event of fire. It is always good policy where railway cars are loaded with explosives and are afire to move the cars too, if possible, away from the yard.

Another View of the Fireworks Plant Near Chicago After the Explosion.

While the explosion upset the machinery shown in the above illustration, it was fire that removed all traces of combustible material. The explosion, or series of explosions, were felt for miles around. The plant, while comparatively small in output, covered 10 acres.

This may be done by use of switch engines with sufficient cars between the engine and burning car to protect the train crew in the event that the explosives let go.

Audubon Legion Men Raising Funds—Funds are being raised by the American Legion post in Audubon, Ia., for the purchase of apparatus to protect rural property. In February, 1930, the Legion post voted to support the move for the purchase of fire apparatus.

THE ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

HAVE you ever noticed how the street men or hawkers attract a crowd and then hold them?

There is no secret concerning their method of procedure. They give something away. To draw the crowd they hold promise of free entertainment; they dangle a dollar bill or a handkerchief before the crowd, and the individuals then remain to see what will be done to the items so displayed.

Once the crowd has gathered the next problem is to start the buying wave. To do this, some little trinket is given away free. Perhaps such a practice does not appeal to the so-called intelligenzia, but it has been successful with the average masses.

Why not follow the same line of psychology in holding the interest of volunteer firemen in your company or department? Something must be given away.

It is human nature to want some item for which there is no material charge exacted.

A successful volunteer fire organization is one that gives things away to its firemen—even if it is just free education in fire department matters, for it must be conceded that almost every American boy has inherited a love of the fire service from his boyhood days.

The moment that this free education becomes dry routine or is looked upon as work, interest will lag and the company or department will cease to function in an efficient manner. The work must be disguised as play or be made almost as entertaining.

As a suggestion, drills should be divorced from meeting nights, unless the company officers feel that the men prefer the active work.

It is general practice for the fire department units to meet at least once each month. At these gatherings, there should be a general round table discussion on some phase of fire-fighting or fire prevention. If a fire broke out during the month, a discussion of how the fire should have been fought will create a great deal of interest. The officers will probably defend whatever action they took, while some of the firemen will be staunch supporters of some pet theory of their own.

Again consider the free element.

Should company funds permit, it might be well to have some light refreshments either after each meeting, especially during the cold winter months, or set aside several meetings during the year for a frankfurter supper or smoker. The members must be made to realize that there is some material gain in being a member of the volunteer fire service. Many departments take advantage of the hunting season. Whenever some of the boys come back from the woods with rabbits, wild geese, or possibly a deer, all of the firemen and the city officials are invited to a big "feed." There is no limit of the possibilities of informal gatherings of this nature to sandwich in with the regular company meetings or to be incorporated with it.

In order to learn of what type program some of the departments follow, a survey was made. The problem in full that is discussed in this issue appears in the box on this page. In the box on the following page is the question that will appear in the next issue. Should you have some comment that you would like to add to the next discussion, you are invited to write to the "Round Table Editor," FIRE ENGINEERING, 24 W. 40th St., New York, N. Y. And as a suggestion, it might be worth while to index this material as a nucleus for a reference library.

HERE IS THE PROBLEM

What type program would you suggest for monthly fire company meetings?

What are the subjects discussed?

Are drills held at this time?

Discussion of the Problem

Each volunteer organization has problems of its own, and it is impossible to present a general program that would apply to all organizations. But one thing is very important. The officers in charge should watch for symptoms of indifference. They indicate that the program followed has ceased to hold the interest of the men, and something new must be introduced. The replies that have been received follow:

T. R. Graham, Chief, Corvallis, Ore.: The program followed in this department for monthly fire department meetings follows:

1. Reading of minutes of preceding meeting.
2. Communications.
3. Applications for membership
4. Resignations and expulsions
5. Bills presented
6. Reports of officers
7. Reports of committees
8. Election of officers
9. Unfinished business
10. New business
11. Collections of fines and dues
12. Roll call
13. Adjournment

Matters of interest to the department together with the discussion of important fires are considered.

Drills are not held on meeting nights. They are always held on some night other than a meeting night.

J. W. Randlette, Chief, Richmond, Me.: I would suggest that some program be followed that would interest the men and get them thinking out their own solutions of problems. Our whole department attends our monthly meetings.

My plan is either to assign problems for a future meeting or give a talk on some subject that will interest the members. Some of the problems assigned are how to fight fires in business blocks, manufacturing plants, school houses, dwellings, and how to handle brush fires. I assign some building to a company officer and tell him where the fire is located. At the next meeting he

is to tell how he would fight that fire and assign companies. This method creates interest and brings out many questions from all members, especially when they think the fire isn't handled right. Another method is to have some officer of another department come to the meeting and give the members a lecture on some particular fire practice subject.

Another method is to have round table discussion of various subjects to keep the men interested and make them anxious for the monthly meetings.

At our monthly meetings we have discussed inspections, handling of equipment, fighting imaginary fires, salvage work, laying hose, raising ladders, ventilation, methods of locating fire before using extinguishers, care of hose, first aid and hurry without confusion.

Drills are only held during the summer months when the apparatus can be taken out. The hall where meetings are held will not permit drill work to be held. The only indoor work we follow is the tying of knots, first aid and the method of moving an injured person.

D. W. Flynn, Chief, Great Barrington, Mass.: All subjects pertaining to fire and to the extinguishing of fires in different parts of the town should be considered.

At our monthly meetings, when we reach the good and welfare of the company, I make it an open meeting so that any member may bring up any subject concerning fire department work for an informal discussion. I find that this is of great benefit to all members. In that way the different size water mains, hydrants and water pressure are discussed. The members are better able to know the functions of a hydrant and to better understand it, how to connect a pumper and the care of the hose. On the meeting nights I announce the drill date for the month. No drills are held on meeting nights.

Meade W. Powell, Chief, Lowell, Ariz.: We first hold our regular meeting and then give a radio party or a bean feed afterwards. This brings the volunteer firemen out. Drills are separate from regular meetings.

L. T. Cothran, Chief, Spartanburg, S. C.: There should be a meeting of all companies once or twice a month. This department has two meetings each month.

Each man in the department must, at this meeting, be able to answer all questions concerning the location of fire alarm boxes, name and location of streets, location of fire hydrants, location of all buildings with fire escapes, location and operation of all buildings with sprinkler system. Engineers of the department are questioned about the operation of pumps. All fire equipment is named and each man must be able to find it on the truck and tell its uses.

All fires are discussed so that the department will be able to benefit from any mistakes that may have been made. All men drill twice each week.

Edward G. Spooner, Chief, Fairhaven, Mass.: I would suggest drills with apparatus at local fire risks such as business places, factories and residences, especially the most inaccessible locations.

These drills or practice meetings may be held in suitable weather. If the weather is stormy or too cold, meetings are held indoors and we discuss the best method of using different appliances in places where we may be called upon in actual operations.

From June to September, inclusive, the drills or practice meetings are held out in the open.

Russell Dyche, Chief, London, Ky.: Our department of one company has monthly meetings at which time we also drill. First we take up any business connected with our club room and then discuss any fires that have occurred since the last drill. Each member is given an opportunity to suggest any different method of fighting the fire, always placing special stress on why such a procedure was followed. If there were any deficiencies shown at these fires, our drill is centered around that point with a view towards correcting them. Otherwise we go through routine work on a supposed fire to bring all the men into action.

Our department is divided into "reds" and "blues" and we often have contests between the two. At times there are quite lively and helpful discussions.

Wm. H. Arnold, Chief, Canonsburg, Pa.: My first topic of discussion for a newly organized fire department would be on the best way to finance a volunteer fire department, the firemen's relief association, and sick and accident fund or insurance, the care of apparatus and hose owned by the company, how to keep the members interested in attending the monthly meeting, how to respond quickly to fire calls, the benefit and operation of first aid, work with the pulmotor or inhalator, the best way to handle a fire with the least amount of water damage, the wisdom of supporting a drum and bugle corps or a band to maintain interest, and so forth.

* * *

ANSWERS TO PREVIOUS QUESTIONS

The following reply is in answer to a query on whether a practice is made of photographing fire hazards and suspicious fires, and if so, what city department does the work.

Joseph H. Leeds, Chief, Atlantic City, N. J.: We have an Arson Squad in the Police Department that works in conjunction with the fire department. It is equipped with a camera and the men take pictures of all fire hazards and suspicious fires. The pictures are turned over to the fire department.

We find the pictures are valuable and are the only way we have of presenting an arson case in court. It also helps in our endeavor to eliminate fire hazards caused by the accumulation of rubbish and so forth as we have all the pictures to refer to, if necessary.

* * *

The following reply is answer to a question as to whether or not the department has insurance to compensate the men for injury:

P. F. Baraw, Chief, Lyndonville, Vt.: We have no compensation insurance. While we have had no fatal injuries in our department we have given no compensation to the injured other than from our local firemen's fund. I am absolutely in favor of compensation insurance.

HERE IS THE PROBLEM FOR THE NEXT ISSUE

Does your department operate a repair shop?

In addition to fire department repairs, do you believe it wise to do work for other city departments?

Has the repair shop been costly to maintain?

New Hazards Caused by Midget Golf

Miniature golf courses, which are taking to steam heated winter quarters, are running into hazards entirely different from those of the game itself, hazards which are listed as forbidden by S. L. Legreid, Fire Marshal of Illinois. According to the Fire Marshal, many of these golf courses are being placed in various sorts of available buildings, some of which will not qualify under the fire rules of the state. He issues the following warnings:

That sufficient exit facilities be provided and that for second floor halls the fire escape statute will apply.

That joint occupancy of the same building for garage purposes and for purposes of public assembly is not permitted.

That promiscuous use of inflammable materials to give a realistic effect of greens and landscaping will not be allowed.

Owing to the popularity of this sport, the Marshal has instructed all deputies to make a careful inspection of all midget courses in their territory and require a substantial compliance with fire and safety rules of the department.

Lincoln, Neb., to Erect Fire House—A new fire station will be erected in Lincoln, Neb.

With the Editor

The Fire Menace from the Air

Aviation, like practically every step forward in modern progress, includes certain penalties that humanity must pay for for such advances. One of these, apparently, is the hazard from fire incidental to the falling of planes which have become unmanageable. Several such unfortunate incidents have occurred in various parts of the world recently. In one of the latest, in Poland, two military fliers were testing out a plane when it caught fire and dropped upon a two-story dwelling, setting fire to the structure, which was destroyed. Six of the tenants of the building were injured, one, a woman, dying of her hurts. The fliers were both killed.

This, among several similar incidents, illustrates the growing menace from the air. With the increase in the number of fliers which the cheaper plane will undoubtedly bring, and also the probability of many less skilful operators among the added numbers, Chiefs may easily look forward to this extra worry to their already greatly increased number of fire hazards. At present, with the national licensing of plane operators, the Chief of the Fire Department and the Police authorities of a city or town have little control over the situation.

Eventually, state control over aviators may come, the same as over the automobile driver. But, until that day arrives, the Chief will have the hazard of the aviator who flies his plane too low for safety to deal with, as well as the uncontrollable danger of a blazing plane dropping from a higher altitude upon a city or town and causing a serious fire. This is one of the things we have to pay for in our strenuous age of feverish progress.

Hazards of the "Movie" Film

In two instances in the past fortnight at widely separated points disastrous panics have been averted in moving picture houses only through the steadiness of the audiences and the quick-wittedness of the operators. In one case, occurring in New Jersey, a can of films lying on the floor of the projection booth caught fire from some unknown cause, and enveloped the operator in flames, scorching him about the hand and face. He stood his ground, in spite of the pain, and fought the fire until the smoke and flames became unbearable and then ran to the manager's office to give the alarm. The manager instructed his ushers to get the audience—composed mostly of children—out as quietly as possible, and this was accomplished without any sign of panic or confusion.

A similar case happened in a California city. In this instance, a film broke in the projecting machine, and burst into flames. The operator quietly instructed the audience to file out as rapidly as possible and then turned his attention to fighting the fire. Only the equipment in the fire-proof booth was damaged.

These and a number of like occurrences in moving picture houses, emphasize the great necessity for the perfecting of a film that will not be so extremely inflammable or fully protecting it. There is a slow-burning film in use, but it is claimed to be so inferior to the inflammable nitro-cellulose type that it is commercially impracticable. The only alternative, at present, apparently, is the adoption of a fire-proof booth for the projection of the film, so that, in case of fire, the flames can be confined to the booth and there is little danger of their communicating to the body of the theatre.

Unfortunately, however, this does not preclude the peril arising from panic among a nervous audience, when it is known that a fierce fire is burning in such close proximity to the auditorium. It is a splendid tribute to the steadiness of the average American audience that, in spite of the occurrence of these fires in projection booths, few panics have, as yet, occurred, where such protection is afforded. But that does not say that such an occurrence is impossible. In fact, every time such a fire occurs, there is the possibility of just such a catastrophe. Panic is contagious in a public assemblage. It would need only one or two unbalanced individuals to start a stampede for the exits of such a theatre which might easily result in as serious loss of life as occurred in the two or three fatal "movie" fires which are on record, not to speak of those in other amusement houses, all exaggerated in loss of life through the results of panic.

Too many precautions cannot be taken by Chiefs in insisting upon wide exits, easily reached by the audiences, and plenty of them, in such places of amusement.

Catching the False Alarm Sender

It is a peculiar coincidence—or is it a coincidence?—that almost invariably when an accident to a fire truck occurs with more or less serious results, the box summoning the motor apparatus has been pulled as a false alarm or at least for a trivial fire that could have been extinguished by the sender without calling the fire department.

However this may be, the individual who knowingly and maliciously sends in a false alarm summoning the apparatus without cause is a criminal in deed, if not by law. Fortunately, in most municipalities at the present day, the culprit can be legally punished—if he is caught.

But here's the rub! Like his first cousin, the arsonist, the false alarm sender is usually a wily individual, and generally sees to it that he can escape undetected before he performs his nefarious act. So that more often than not he escapes punishment.

A device designed by a resident of Fresno, Cal., may, if ever brought to a state of perfection, provide a remedy to this problem. It consists of a photographic arrangement attached to the box, whereby, when an alarm is pulled, a small amount of flashlight powder explodes simultaneously with the snapping of the shutter and instantaneously takes a picture of the person sending the alarm. Such a plan properly safeguarded from meddling hands, might ultimately spell the end of the sending of false alarms.

Boston Improving Fire Department

Fire Commissioner Edward F. McLaughlin, of Boston, Mass., is proving one of the most popular and efficient executives that has ever been at the head of the Hub Fire Department.

Edward F. McLaughlin, Fire Commissioner of Boston

Since his appointment last spring, working in close cooperation with Chief Henry A. Fox, he has instituted many innovations and improvements.

It was through his efforts and interest that plans were drawn for improved equipment for combating waterfront fires. The organization of the Boston Fire Department Band was due to his enthusiastic aid in obtaining expert musical instructors and arranging for regular rehearsals. The band consists of 150 pieces and made its first appearance in the Massachusetts Tercentenary parade this fall. Since then it has played in the Boston Garden and Symphony Hall, receiving a real ovation on each occasion.

The new firehouse in Bowdoin Square has been completed and will be placed in service this month. Three new American-LaFrance 85-foot aerial ladder trucks have been assigned to duty, one with Ladder Co. 8, one with Ladder Co. 24, and one with Ladder Co. 4. These new ladder trucks have four wheel brakes on the tractors, booster brakes on the tiller wheels, and one man control for the aerial ladder.

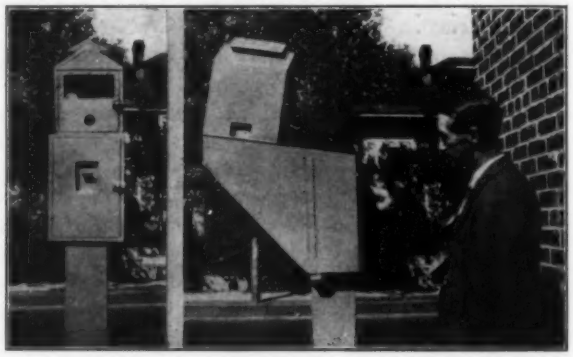
A contract for a powerful fire boat will be awarded in the near future and Mayor James M. Curley has authorized the drawing up of plans for two new fire houses.

HARRY BELKNAP.

Fire Department Band Participating in Tercentenary Parade

Box Attachment Snaps Pictures

A device, attached to fire alarm boxes, to photograph the person turning in a fire alarm at the time the handle is turned, has been designed by a resident of Fresno, Cal. The attachment is so arranged that when the handle of the fire alarm box is manipulated, a small amount of flashlight powder is set off and the shutter of the camera is opened. The mechanism is entirely self-contained and has no wiring connections with the present fire alarm system.



A Device That Photographs Sender of Fire Alarm
Left—Front view of the attachment for fire alarm boxes, and right, a side view of the mechanism.

The illustrations show a working model of this design. It is ten inches in width and eighteen inches in length.

Pictures may be taken both day and night, and from the pictures it is possible to approximate the sender's height. The attachment, according to the designer, can be serviced in about two minutes. The outfit, including the box, can be built for about $17.50, including labor.

N. Y. Firemen to Aid Unemployed

New York City firemen are voluntarily contributing one per cent of their monthly salary to a fund being raised under the auspices of the Mayor's Official Committee for the alleviation of distress and suffering as a result of the prevalence of unemployment throughout the city. Everybody in the Fire Department, both uniformed and civilian branches, are donating. The monthly quota from the firemen will be approximately $19,284. The entire city payroll should yield $250,000 a month.

Fire Commissioner John J. Dorman is the Fire Department member of the Mayor's Official Committee. The personnel of the committee is made up of the heads of all city departments, constituting a committee of the members of the Mayor's Cabinet. Mayor James J. Walker is the Chairman of the committee; the Treasurer is City Chamberlain Charles A. Buckley and the Secretary is the Mayor's Secretary, Thomas F. McAndrews.

The de facto secretary is Wm. Jerome Daly, former newspaper man, fire fan and contributor to FIRE ENGINEERING on matters affecting New York City. The committee has opened offices at 346 Broadway where a staff allocated from other city departments are engaged in the task of investigating over 35,000 cases of requested relief, particularly those where the breadwinner of the family is out of employment.

Michigan Closes Experimental College—The state of Michigan is closing its first year's work at the forest fire experimental station, where experiments in forest fire fighting have been carried on. Extensive studies were made of "duff" to determine the absorption qualities of the various kinds of humus.

Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified

Equalizing Engine Pressures

To the Editor:

Will you kindly answer the following question regarding an engine hook-up?

When pumping water from two engines through the same turret, having one pressure on one engine and a different pressure on the other engine, what is the proper method of equalizing the pressures from the two engines to the turret? I know there is a way to do this by running a line from one engine to the other but I would like to know the exact procedure in order to accomplish this.

H. J. C.

Answer: One hook-up which will equalize the pressures between the two engines supplying a deck gun is to connect a discharge outlet on each pumper with a line of hose. By this arrangement one of the discharge outlets would be connected to the deck gun or turret pipe while the other would be connected to a discharge outlet on parallel pumper. This arrangement tends to keep the discharge pressure of both pumpers balanced.

Testing Ladders

To the Editor:

While in attendance at the first Ohio Fire School in Columbus during September of this year I learned that

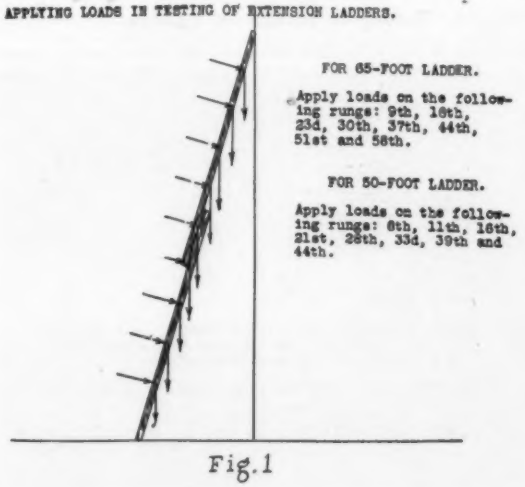

APPLYING LOADS IN TESTING OF EXTENSION LADDERS.
FOR 65-FOOT LADDER.
Apply loads on the following runge: 9th, 16th, 23d, 30th, 37th, 44th, 51st and 58th.
FOR 50-FOOT LADDER.
Apply loads on the following runge: 8th, 11th, 16th, 21st, 28th, 33d, 39th and 44th.

Fig. 1

FIRE ENGINEERING has specifications or standards for testing the various kinds of ladders used in fire departments to determine their condition after they have been in service for some time. Would you kindly send me a copy of these specifications?

Answer: No printed specification covering testing of ladders have been published but full information on methods of making tests as well as the requirements which should be imposed upon ladders after they have been in service for some time were printed in the FIRE ENGINEERING of March, 1923. For the information of our readers who have not copies of this issue on hand, the following information is reprinted from that number:

In considering the following data, several points must be taken into account: were the ladders originally of a good make; are they of standard dimensions; what use have they been subjected to; have they ever been repaired.

The above all have bearing on the severity of the tests they should be subjected to, but, at the same time, it must

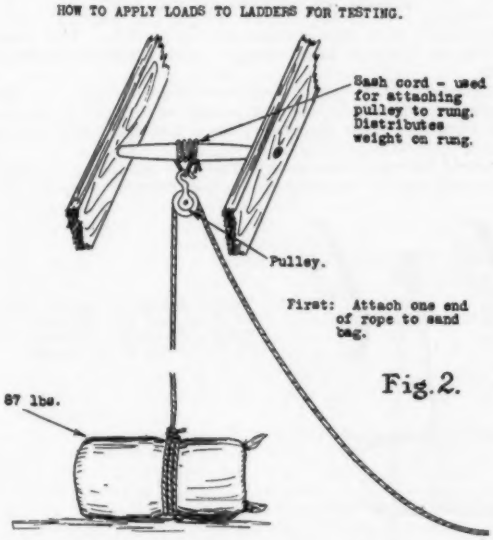

HOW TO APPLY LOADS TO LADDERS FOR TESTING.
Sash cord - used for attaching pulley to rung. Distributes weight on rung.
Pulley.
First: Attach one end of rope to sand bag.
87 lbs.

Fig. 2.

be remembered that ladders, whether old or new, weak or strong, may be submitted to the same stress in an emergency. In view of this condition, it must be conceded that a ladder, if unable to stand up under a fair test, should be

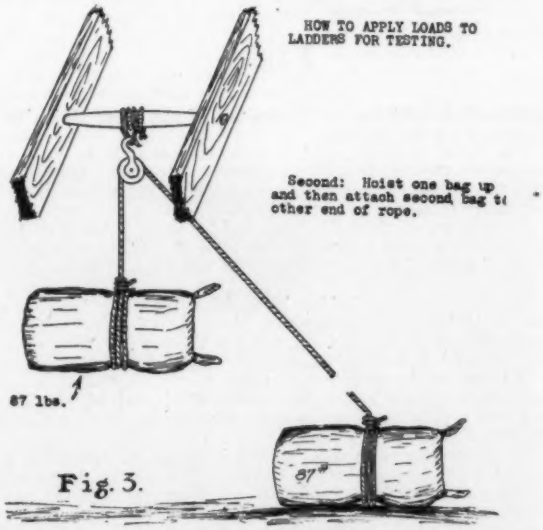


Fig. 3.

discarded. This is one of the objects of testing ladders—to determine which ones are unfit for further use.

But what can be considered a fair test?

Surely, the submitting of a ladder to no more than the stress which it might receive in the course of ordinary usage could not be considered satisfactory. The strength

of a ladder decreases with time and usage, and if the ladder is just strong enough to answer ordinary usage at the time the test is made, it is possible that the natural weakening during the period between tests might be sufficient to cause the collapse of the ladder in service during that period.

It is for this reason, as well as to guard against possible excess loads in case of emergency, that ladders should be expected to safely carry more weight in test than they would when used in ordinary fire service.

The above points are taken into account in the following figures:

The New York Fire Department permits only one man at a time on ladders of from 10 to 15 feet in length; two men on ladders of from 20 to 30 feet in length; 3 men on ladders more than 30 feet in length.

The number of men, however, on 50 and 65-foot extension ladders might safely be increased to 4 men.

Weight on Ladders During Test

The weight of a man is taken at 175 pounds. The weight of a foot of 2½-inch hose charged with water is about 3¾ pounds.

Considering first the 65-foot extension ladder. If there are four men on the ladder the combined weight of the men is 700 pounds. This, however, does not take into account the weight of the hose lines.

It would be unfair to merely test the ladder to a load of 700 pounds, for in an emergency this number may be even

Third: Afterend. bag is tied, lift it so that 1st. bag will descend sufficiently to keep both bags clear of the ground.

Fig. 4.

increased, in addition to the weight of any hose which may be placed on the ladder.

The usual practice, and it is a safe one, is to take the weight of the number of men permitted on the ladder and test the ladder to twice this weight, not taking into account any allowance for weight of hose.

In this case, therefore, the ladder would be tested to twice 700 or 1400 pounds. The load should be evenly distributed along the ladder in units of 175 pounds, the assumed weight of a man.

Fig. 1 shows the ladder in position with the location of the loads indicated by arrows. For the 65-foot ladder the loads should be applied on the 9th rung from the ground, the 16th, 23rd, 30th, 37th, 44th, 51st and 58th. 175 pounds is the load to be attached to a rung.

About the most satisfactory method of applying the load, and one which does not entail any danger to the men is shown in Figs. 1, 2, 3, and 4.

To each rung on which a load is to be suspended is attached a sturdy clothesline pulley. The pulley is secured to the rung by a piece of sash cord or quarter-inch rope. Through each pulley is threaded a piece of sash cord or quarter-inch rope of sufficient length to reach the ground at both ends.

A number of bags of sand are provided, each weighing 87 pounds.

One end of the cord through the pulley is attached to one sand bag as shown in Fig. 2. Then this bag is drawn up into the air by pulling on the other end of the cord as shown in Fig. 3. Then the free end of the cord is attached to another bag, also as indicated in Fig. 3, after which the second bag is lifted so that the first bag descends sufficiently to keep the 2nd bag clear of the ground. The two bags together weigh 174 pounds, while the rope and pulley make up the remaining pounds.

This method, if all cords are threaded through the various

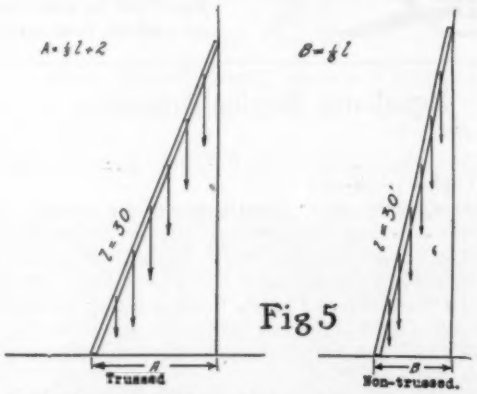


Fig 5

A -- Distance base of trussed ladder should be placed away from building. B -- Distance base of non-trussed ladder should be placed away from building.

LENGTH OF LADDER	A	B
30 feet	8-ft.	4-ft.
32 "	8½	4
35 "	9	4½
36 "	9½	4½
40 "	10	5

pulleys before the test starts, makes it to add on the load gradually without endangering the men adding the load.

Bags suspended in position are shown in Fig. 4.

Testing the 50-foot Extension Ladder

The test on the 50-foot extension ladder is carried out in a similar manner, but the loads are attached to the 6th, 11th, 16th, 21st, 28th, 33rd, 39th, and 44th rungs.

Testing 30 to 40-Foot Ladders

The tests of these ladders are precisely the same as those for the extension ladders described above with the exception

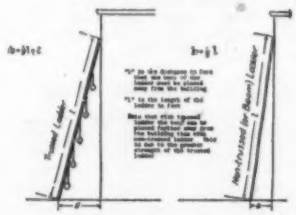


Fig. 6.

In the above, "l" is the length of the ladder, measured in feet. "b" is the distance from the base of the building the butt of the ladder should be placed.

Values of "b" for different length laddags is as given below:

LENGTH OF LADDER In feet	"b" for Trussed Ladder.	"b" for Non-Trussed.
20	6	3
22	6½	3
24	7	3½
25	7	3½
28	7½	4

The formula for non-trussed ladders is not followed strictly in calculating lengths of short ladders.

that the 30 to 40-foot ladders are subjected to a test of 1,050 pounds—the equivalent of 6 men—instead of 1,400 pounds for the longer extension ladders.

The rungs on which to attach the loads on these ladders are indicated in the following table:

Length of ladder	Rungs to which loads are attached
30 ft.	6, 10, 14, 18, 22, 26
32 ft.	7, 11, 15, 19, 23, 27
35 ft.	7, 12, 16, 21, 25, 30
36 ft.	7, 12, 16, 21, 26, 31
40 ft.	8, 13, 18, 23, 28, 33

(*Continued on page* 977)

RIVER-FRONT FIRE SWEEPS PROVIDENCE COAL YARDS

Three Alarms Turned In—Eight Seamen on Ship Loaded with Sulphur Forced Overboard — Fire-Fighters Overcome by Fumes.

TWO hundred and fifteen firemen were called to fight a fire that started in the structures of the Turks Head Coal Company, on the waterfront, at Providence, R. I. It is not known definitely what caused the fire but the popular theory is that it may have been due to defective wiring.

The fire started in a four-story wooden building, sixty years old, located on the water front. The structure measured six hundred by one hundred feet. There was no sprinkler protection. At the time of the fire there was a steel ship in the slip loaded with sulphur.

A General View of the Fire That Damaged the Coal Wharf in Providence, R. I., and Destroyed the Superstructure of a Boat

Fire was reported at 10:30 a.m. When fire companies arrived they found the makings of a conflagration. Firemen who worked their way to roofs to direct effective streams, were nearly trapped and were forced to jump from roof to roof for safety.

Directing Streams on the Burning Ship

Four pumpers and two aerials responded to the first alarm, and the same assignment responded to the second and third alarms. In addition there were special calls for two extra pumpers.

Twelve men were working in the sulphur pits of the boat and others were cleaning the ship below decks. All but eight men leaped to the dock and the others jumped overboard and swam across the river. The boat arrived two days previous with a cargo of sulphur from Galveston, Tex. It contained about 700 tons of sulphur.

Three tugs were unsuccessful in reaching the burning boat but the tugs were used to throw streams of water on the craft. A 115-foot derrick used for unloading at the slip collapsed after flames had weakened the base, and crashed across the deck. After the crash there was a false report that one man was pinned beneath the wreckage, but later the rumor was found to have been without foundation. All the woodwork on the deck and hurricane deck amidships was wrecked. Tar and oakum was forced out of the deck seams by the intense heat.

Water was supplied by a 30-inch main through six hydrants. The pressure varied from 80 to 130 pounds. The men used 1⅛ and 1½-inch nozzle tips. In all 11,050 feet of hose were laid and traffic was blocked in all directions.

The fire was difficult to reach. It was situated between two slips, and heavy sulphur dioxide fumes were generated by the burning sulphur. A number of gas masks were used for the protection of the men.

Oil Rains on City from Wild Gusher

Extraordinary precautions were taken by Oklahoma City, Okla., when a wild oil gusher sprayed a large part of the business section with a fine coating of oil and cut through the master gates that controlled the flow from the well. The well is located in the north end of the city field.

A. E. Wilkerson, Assistant Fire Chief, stationed firemen at vantage points in the southeast section of the city to prevent the use of open fires of any kind. After the master gates gave way, the roar of the well could be heard plainly in the north part of the city. Firemen reported the entire wholesale district was in immediate danger.

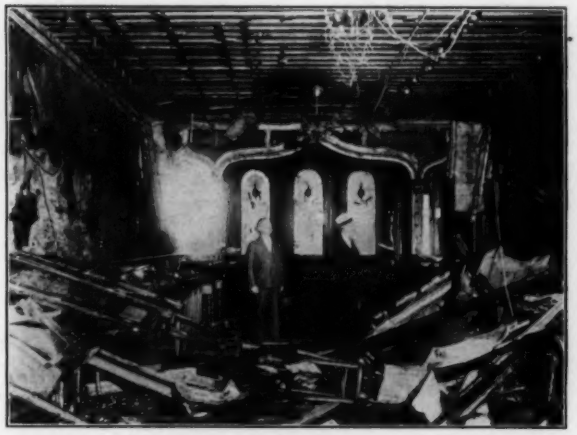
Seven units of the National Guard were mobilized on the following day to help the local fire department. A special hospital company was also ordered out.

Six city schools were ordered closed because of danger from the well. Switch engines of the M. K. & T., Rock Island, and the Santa Fe Railroads were unable to operate because of the danger of open fires from the locomotives, and thousands of dollars of perishable material in the freight cars were affected.

On Saturday, November 1, two days after the well went wild, the danger zone was reduced. Chief Wilkerson, who was in charge of safety operations, made tests of the air and found that the safety zone could be reduced in area. Apparatus from No. 6 Company were kept in the danger zone loaded with foam equipment. Other companies were detailed to serve as a patrol to see that all fires in the danger zone were extinguished.

Early Sunday afternoon a picked crew headed by one who had experience in taming another wild well early this spring, succeeded in shutting in the well. A die nipple connection was hoisted into place early Sunday and by noon it had been stabbed in place, thus diverting the flow of oil straight up the derrick and more than one hundred feet above the top of the 122-foot derrick. Natural gas was used in place of steam to run the engines which operated the draw works in making the connections.

When the nipple connection had been anchored into place



"After the Ball Was Over"

This is the remains of a hall used for wedding receptions and banquets in the East Side section of New York City. The blaze developed into a two-alarm fire.

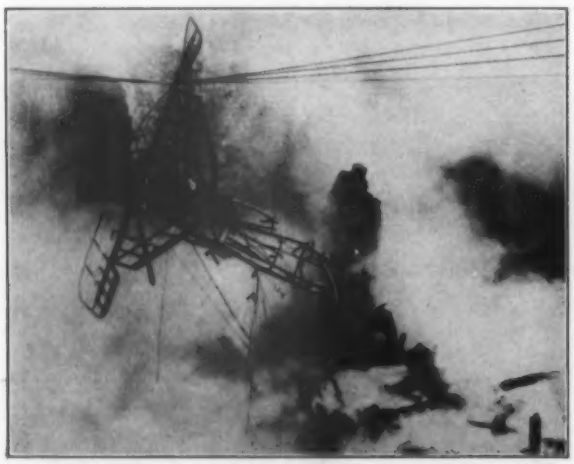
with chains, the master gates were closed and gradually the gusher was brought under control. It passed into history as the greatest menace ever encountered by the capital city.

WHAT'S BURNING

THE following list includes fires of $25,000 loss and over in the United States and Canada, for the periods designated in the headings. These figures, compiled from telegraphic reports, are based on estimates made at the time, and are subject to later investigation and consequent revision. Taken as a whole, however, they give an approximately correct view of the losses incurred. The figures represent loss in thousands of dollars.

Week Ending October 31	Loss in Thousands of Dollars
WILLIAMSBURG, OHIO—Business and residential property	80
HARRISBURG, ARK.—Residence of Harry Holmes	25
FREEPORT, ME.—Main Bldg. of Freeport Realty Co.	25
IRVINGTON, VA.—Irvington Beach Hotel destroyed	40
NORTH LITTLETON, MASS.—Ice houses of Daniel Gage, Inc.	30
HARLOWTON, MONT.—Lyon's block, business and apt. property	80
MONTEREY, CAL.—Del Monte Bathing Pavillion	45
RALEIGH, N. C.—Raleigh Auditorium destroyed	100
MANCHESTER, N. H.—Market district damaged	25
BURLINGTON, IOWA—Rialto Theatre destroyed	75
UNION, N. J.—Dairy barn of Louis Borinski & Sons	80
BUFFALO, N. Y.—Dock of Lehigh Va ley R. R., adj. property	45
MOCLIPS, WASH.—Geertz Theatre, adj. property	30
WARWICK, R. I.—Warwick Country and Yacht Club	40
NEW HAVEN, CONN.—Connecticut Paint and Putty Shop	30
CONWAY, N. H.—Garage of Conway Motor Co. destroyed	25
NEW BRITAIN, CONN.—Smith School, Kelsey St.	35
SPARTA, WIS.—Bldg. occupied by H. Jackson Drug Store	25
NILES, OHIO—Plant of Niles Corrugating Co.	35
CONSTANTINE, MICH.—Home of John P. Drake destroyed	25
WATERLOO, ONT.—Factory of Weber Furniture Co.	125
HEYWORTH, ILL.—Purkey seed storage plant destroyed	25
BARTLESVILLE, OKLA.—Several business establishments	50
COVINGTON, TENN.—Bldg. occupied by Dine-Schabell Co.	80
CONEY ISLAND, N. Y.—Stauch's Stables, adj. property	80
LOUISVILLE, KY.—Property occupied by Rudolph & Bauer Co.	80
FAIRBURY, NEB.—Several business establishments	30
CHALFONT, PA.—F. D. Hartzell & Sons flour mill	80
OAKLEY, IDAHO—Portion of business district	25
WINCHESTER, VA.—Plant of Eastern Silica & Chem. Co.	80
ULEN, MINN.—Barn on Wise farm, 4 mi. south	65
CRANDALL, TEX.—Citizens National Bank, adj. property	80
BELLEVILLE, ILL.—Property of National Coal Co.	30
SPENCER, N. C.—Catawaba Ice & Fuel Co. plant	80
NEW BRIGHTON, MINN.—Elevator of Twin City Feeding Co.	25
ATHOL, MASS.—Parmenter block damaged	45

Week Ending November 7	
PLAIN CITY, OHIO—Several business establishments	25
FRESNO, CAL.—Consumers Ice Plant damaged	65
DURHAM, N. C.—Warehouse of American Tobacco Co.	25
MAIDEN, N. C.—Grade school building	25
PAMPA, WASH.—Warehouse of Pacific Coast Elevator Co.	125
ELGIN, ORE.—Mill of Pondosa Pine Lumber Co.	45
OAK GROVE, LA.—Old First National Bank Building	30
BOSTON, MASS.—Property at 46 Lagrange St., Steinert estate	25
PARK RIDGE, ILL.—Prospect Avenue School destroyed	50
MARIETTA, GA.—Five business establishments destroyed	200
SAN FRANCISCO, CAL.—Several stores and apts., North Beach	65
MONTEBELLO, QUE.—Sawmill of W. T. Owens destroyed	65
MIDLAND, ONT.—Business bldgs. in C. P. R. block	35
NEW YORK, N. Y.—Bldgs. at 35-41 Barclay Street	175
ATHENS, TENN.—J. T. Moore Feed Store, adj. property	50
LEXINGTON, KY.—Property of Miss O. E. Israel	30
KANSAS CITY, MO.—White Eagle Oil Corp. tank	25
CAIRO, ILL.—Towboat James B. Ostrander destroyed	40
CHESTER, PA.—Chester Packing & Provision plant	80
DES MOINES, IA.—Business property owned by Moses Marks	40
ROCKFORD, ILL.—Buick garage, West State St.	80
SECURITY, MD.—Whse. of North American Cement Corp.	40
WALDRON, IND.—Plant of Reese Canning Co.	65
NORTH SCRANTON, PA.—Lincoln Hall damaged	50
WASSAW, GA.—Thunderbolt Casino Clubhouse destroyed	50
PARKROSE, ORE.—Bldg. at Adler Chemical Plant	25
ST. LOUIS, MO.—Whse. of Anheuser Busch destroyed	250
LIMA, OHIO—Headquarters of Lima Telephone Co.	25
FUNKSTOWN, MD.—Christ Reformed Church destroyed	25
CHILI, N. Y.—Kolb's Inn, Frank Kolb owner	60
NEW WESTMINSTER, B. C.—Plant of Fraser Valley Tie Co.	60

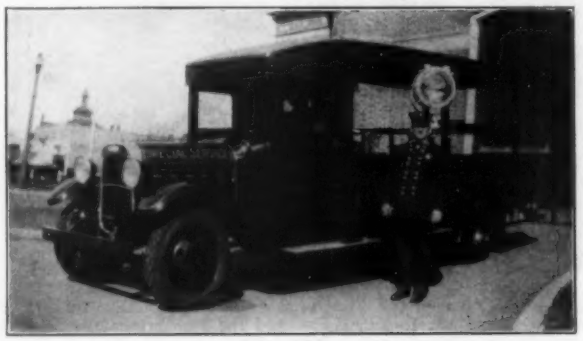


House Set Afire by Airplane Crash

Two Polish military aviators flying in Warsaw, Poland, crashed into a chimney. The charged wires in which the airplane was caught set fire to the gasoline tank and the flames then spread to the house below. The photograph shows the metal skeleton of the airplane and some of the ruins of the house.

Arlington Has Special Service Truck

The accompanying picture shows the "Special Service Truck" recently placed in service by the Arlington, Mass., Fire Department. It is a combination rescue car and search-



Chief Daniel B. Tierney Beside the Special Service Truck

light wagon and has many unique features. Chief Daniel B. Tierney's ideas were worked out by the builders, the Federal Motor Truck Sales Corporation, of Boston.

The equipment includes a Kohler lighting plant, one fixed searchlight of 500 watts and one portable searchlight of the same power, 1000 feet of insulated cable, H and H inhalators, first aid kit, saws, acetylene cutting outfit, two Burrell all-service masks, two Mine Safety Appliance masks, Bresnan nozzle, Carey cellar pipe, Blanchard flexicot, splints, life-belt, trolley wire pickup device, P and Q door opener and various tools, soda and acid extinguisher and carbon dioxide extinguisher, and salvage covers. The fixed searchlight is mounted on a sliding board and can thus be moved to either side desired. Several of the new flare "stop" signs to divert traffic from night fires are carried on this piece of apparatus.

Chief of Second Alarmers Dead

P. J. Glenn, Chief Engineer of the Second Alarmers Association of Philadelphia, passed into the Great Beyond on September 29. Death was due to heart trouble. Chief Glenn, who was thirty-eight years of age, had been in the hospital for some time. He entered the Association in 1923 and was made Chief in 1928. He held the post up to the time of his death. As a memorial tribute, a large floral piece in the form of a huge badge was sent to his home by his men. Last respects were paid by the Association the day before the funeral.

EDWARD H. SPRANGERS.

Fire Station Completed in Bastrop, Tex.—A combined city hall and fire station has been completed in Bastrop, Tex.

Funds Being Raised for Mt. Morris Apparatus—Funds are being raised from among the farmers living around Mt. Morris, Ill., for the purchase of fire apparatus to protect rural property. The apparatus would be cared for by the village.

Boys Win Fire Prevention Essay Contest.—A most unusual thing resulted from the fire prevention essay contest held in San Antonio, Tex. Prizes were donated by a local resident. Five hundred essays were submitted and when the judges announced the awards, the winners were all boys.

CAUSES OF AND REMEDIES FOR SPONTANEOUS IGNITION

Action Will Take Place in Two Classes of Materials—Upon What Point of Ignition Depends — Difficulty in Educating Public

By H. C. DICKINSON,
Heat and Power Division, U. S. Bureau of Standards

SPONTANEOUS heating and spontaneous ignition are terms which almost defy exact definition. Some of the phenomena involved have baffled experimenters for many years, yet the results of spontaneous ignition constitute one of the very large elements in the fire loss of the nation. Somewhere between 45 and 50 million dollars a year, or between 8% and 10% of the total national fire loss is attributable to this general cause. This, too, is a real economic loss, not merely a redistribution of wealth or a paper loss like taxation or deflation on the stock market.

There has been much confusion of ideas as to the causes and nature of the phenomena generally classed as spontaneous heating and ignition. The term spontaneous is properly applied to that which occurs without external cause. Spontaneous heating of a substance therefore implies that the heat is generated within the substance itself and consequently that its temperature rises above that of the surroundings. This may be termed an essential condition for spontaneous heating and ignition, viz., that the substance in question is or becomes hotter than its surroundings.

In general, any substance or combination of materials which can react chemically with liberation of heat is a possible source of spontaneous heating and under favorable conditions may ignite if the process is not arrested before this stage is reached.

Two Classes of Materials in Which Action Takes Place

The subject is so broad in its technical aspects that I shall confine myself more particularly to spontaneous ignition.

Turning now to the field in which spontaneous heating is of prime importance as a possible cause of fire with attendant conflagration losses, the materials of most interest may be divided for convenience into two classes (a) those in which inorganic chemical reactions alone take place, for the most part involving oxidation in the presence of air, and (b) those in which organic processes are an important factor. While there is probably no very sharp dividing line between the two classes and there has been much confusion between them in the past, we believe such a distinction may be of use.

Substances which fall clearly into class (a) include the following: oils, coal, lampblack, charcoal, resins, celluloid, sulphur compounds, and fibrous materials which contain or are contaminated with oils and other easily oxidized substances.

Materials of the second class (b) include: hay, grass, manure, grains, seeds, tobacco, and in fact, almost any organic material capable of harboring living micro-organisms which can feed upon it. Other substances which probably belong in the second class but may not be so classed with certainty, are sawdust, cotton, peat and some other substances which can slowly oxidize but offer only poor subsistance for bacteria.

Upon What Point of Ignition Depends

In all true cases of spontaneous heating the extent to which heating occurs, and therefore the chance that it may reach the point of ignition depends upon the rate at which heat is produced and the rate at which it can escape. Herein lies some of the puzzle in the problem and much of the danger of spontaneous ignition as a life and property hazard. Just as it may take a thousand acorns dropped at random to produce one oak, so a thousand piles of rubbish may produce one conflagration; but if there are enough scattered acorns and enough piles of rubbish, the forest may well replace the town, yet the average householder may not be much concerned over the danger of his own pet rubbish pile.

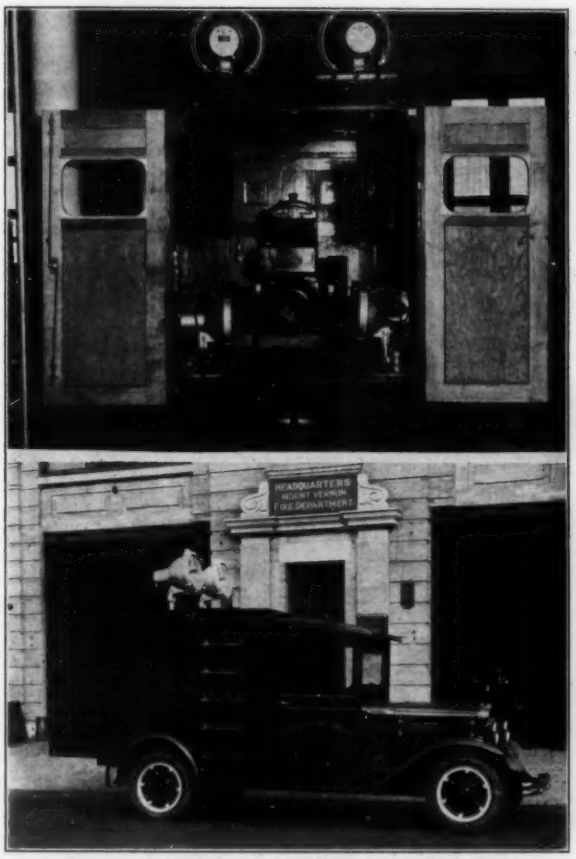
Illustrated by Cotton Waste and Linseed Oil

The conditions obtaining in general are illustrated by the familiar case of cotton waste and linseed oil which in this respect is typical of most of the cases of both inorganic and organic heating. The oil in the waste is subject to slow oxidation even at room temperature. The wad of waste must be so loosely packed that air can diffuse through it to supply fresh oxygen to the oil. Moreover, in this loose condition the waste is an excellent heat insulator so that very little of the small amount of heat first produced can escape by conduction and little is carried away by the air which diffuses slowly. The centre of the waste therefore begins to warm up, slowly at first, but as the temperature rises the rate of oxidation rapidly increases, as do nearly all such chemical reactions with increase of temperature. In this case also, the air velocity through the waste increases with the temperature, supplying the greater amount of air needed for the faster rate of oxidation. Thus the temperature rises faster and faster until ignition occurs.

Instances Where Point of Ignition May Not Be Reached

If now the wad of waste were much more loosely packed, the rate of air circulation would be more rapid and, as the temperature rose, might reach a point where the heat is carried away as fast as it is produced, thus checking the temperature rise before the danger point is reached. This wad of waste then would not ignite. Or suppose that the wad were smaller; then the heat produced might escape by conduction as fast as it was produced and again no fire would result. Or again, if the waste were more tightly packed, it might not admit enough fresh air to produce heat fast enough to balance that lost by conduction. In any of these three cases the oil may continue to oxidize until the process is complete without any very great increase in temperature, and without fire.

For instance a mixture of methane and oxygen in a container may slowly oxidize completely to water and carbon dioxide without igniting, if the container is immersed in heated oil well below the ignition temperature of these gases. This can occur because the heat generated in the gases is lost so rapidly by convection to the walls of the container that the temperature does not rise to the ignition point. If the vessel were loosely filled with asbestos, the gases would explode because the heat



Searchlight Apparatus Installed in Mt. Vernon

A searchlight unit is now part of the equipment of the Mt. Vernon, N. Y., Fire Department. The generator and lights were mounted on a stock Diamond "T" truck. The equipment consists of two 1,000-watt lights, six 250-watt lights and two 1,000-foot reels of waterproof cable with connectors every 250 feet. The upper photograph shows the interior of the truck body with the generating plant at the rear and the reels of cable on either side near the top. Lower—Searchlight truck in front of the Headquarters Station.

of initial oxidation would not be lost sufficiently fast to keep the temperature below the point of ignition.

Case of Living Micro-Organisms Is Different

Where living micro-organisms are concerned, as in Class (b), the problem is different. Other conditions such as moisture and food supply must be favorable to growth of the heat generating organisms. In some cases fresh air may not be needed in the early stages of the process. And in general, the range of temperature within which the living organisms can develop and produce heat is limited. As regards rate of production of heat and rate of loss, however, conditions are the same. In this respect it makes no difference whether heat is generated by living organisms or inorganic reactions.

Since most living things cannot exist at any temperature approaching that at which materials begin to burn, it seems certain that when spontaneous ignition occurs as a result of heating begun by bacteria, the process becomes one of simple oxidation long before the ignition point is reached. All life processes probably cease at about 80°C.

The basic nature of these processes of spontaneous heating and ignition have been discussed in this paper partly to emphasize the highly sporadic nature of these occurrences, from which two general conclusions may be drawn.

Difficulty in Educating General Public

First, as regards the hazards of life and property from this cause, no immediate or very effective remedy is in sight. So long as the public does not know what sort of rubbish piles or oily rags or coal bins may be dangerous, and so long as most people have never seen any one of these ignite by itself, there is not much hope of doing more than gradually to educate the people to use greater care in avoiding the more common and the more serious hazards of this nature.

Problems Easier of Solution in Industrial and Commercial Processes

Second, in regard to commercial and industrial processes in which spontaneous ignition hazards occur, the very sporadic character which makes remedies difficult in the case of the public makes these problems easier of solution. Since dangerous heating can occur only within narrow ranges of conditions, it is only necessary in many important cases to determine what these conditions are and then find means for avoiding them.

Perhaps the best illustration of the importance of this point is the extensive work of the Bureau of Mines on the spontaneous ignition of coal. This suggests the probability of very large returns from carefully considered research on the important spontaneous heating problems of commerce. While spontaneous ignition of coal does not usually involve great hazard to life and property other than to the coal itself, it involves very important economic losses, particularly when fire occurs underground. As the result of the extensive work on this subject, most dangerous conditions are readily recognized and losses are kept to a minimum by proper precautions.

Other problems such, for instance, as that of spontaneous ignition of cotton, jute and various other commodities in storage and shipment, have not yet received the same careful attention. These too probably can be solved when more accurate knowledge is had of the conditions which must be avoided. Work now in progress should go far toward this end.

(From a paper read before the Conference on Spontaneous Heating and Ignition at Washington, D. C.)

Gas Explosion Damages Fruit Warehouse

A two-story modern reinforced brick and concrete storage warehouse in Pittsburgh, Pa., occupied by the Atlantic and Pacific Tea Company as a warehouse for perishable fruits, was badly damaged by a gas explosion. Natural gas heaters were used to ripen tons of bananas on the second floor. An explosion resulted, blowing out the floor columns and concrete walls and causing the collapse of the roof. Fumes of ammonia, released when the blast broke the pipes of the refrigerating plant in the building, smothered the small fire that started after the blast. The building damage was placed at $40,000.

WILLIAM E. PATTERSON.

BOSTON FIRE BOATS TO CARRY PUP BOATS AND HOSE PONTOON

Both Devices Developed to Enable the Department to Reach Fires Under Piers at High Tide—Saves Time at Blaze

As a result of conferences between Fire Commissioners Edward F. McLaughlin, of Boston; Chief Henry A. Fox; Edward E. Williamson, Superintendent of Maintenance; W. C. Bailey, Supervisor of the High Pressure System; and John McDonough, Pilot of Engine 44, the fire boat "Angus J. McDonald," plans were drawn for an improved type of "pup" tender to be carried on the Boston fire boats.

The first of these has been completed and is now in service, having proved highly successful in trials recently held. It was built at the Reid Boat Yard in Winthrop, Mass., and is 13 feet in overall length. The waterline length is 12 feet, 6 inches, beam 4 feet, 6 inches, and draft one foot. The construction is unusually heavy with oak frames and keel.

The pump is a Northern rotary, driven by a 4-cylinder Universal motor and has a capacity of 105 gallons a minute at 129 pounds pressure using a ¾ inch nozzle. The engine and pump are enclosed in a watertight compartment.

In the bow of the boat there is a deck gun with capacity for discharging 600 gallons per minute and using nozzles up to 2 inches in size. A Y makes it possible to connect two 2½-inch lines from the large fire boat or land engines if desired.

If required a 2½-inch line can be connected to the pump in the small boat and siamesed into two 1¼-inch lines, giving two streams for use on the land end of docks or aboard small vessels.

For propelling the boat a 14 horsepower Johnson Sea Horse outboard engine is used and this gives a speed of 6½ miles an hour. This boat is much more stable than the first "pup" craft which were mere rowboats fitted with small pumps and outboard engines.

Besides the "pup" tenders each of the three Boston fireboats is now equipped with a very unique device known as the Landry Fire Hose Pontoon.

The fire at the L Street Bridge last June demonstrated that when the tide was high it was impossible for the rail guns on the fire boats to be directed so that the stream would hit the fire because the guns were considerably higher than the side timbers of the bridge. It was also shown that the "pup boats" then carried on the fireboats could not operate because of the limited space beneath the bridge and that even when the tide had fallen somewhat they were inadequate to cope with the situation because of limited capacity and also because the men operating them were subjected to severe exposure from smoke and heat.

This condition was noted by Arthur J. Landry, a member of Engine 47, the fire boat "John P. Dowd," on duty at this fire. He immediately set out to see if some sort of equipment could be devised which would be able to handle heavy fire streams under bridges and docks where small headroom existed and which could be operated by men at a distance from the point where the stream was to be applied. After giving considerable thought to the matter Landry devised an appliance which he termed a "Fire Hose Pontoon." He submitted a plan of his pontoon to Chief Fox and one was constructed at the Maintenance Department Shops.

Tests showed that the pontoon was able to operate under a bridge using various types of nozzles, the water being supplied from the fire boat with a 2½-inch hose. The pontoon was operated by means of an extension handle at a distance of twenty feet from the boat and it was demonstrated

that if additional sections of the handle were used it could be operated at a distance of thirty-five to fifty feet from the boat.

The appliance consists of a cylindrical pontoon 3½ feet in diameter and made of galvanized sheet iron. On the top of the pontoon there is secured a 2½ inch elbow with a female connection on the lower end for receiving the 2½-inch line. The upper end of the elbow has a 2½-inch male hose thread to receive the various types of nozzles which might be required.

Attached to the pontoon is an adjustable pole or handle made of square steel tubing and so constructed that it may

The Boston "Pup Boat" in Action

be extended in sections of five feet each to a total length of forty or fifty feet. The weight of the hose leading to the nozzle on the pontoon is carried on this handle by means of chain loops and the handle has an additional purpose of being used to push the pontoon under a dock and to control its movements during operations on a fire.

In actual tests the pontoon supplied more than 1,500 gallons of water through a 2½-inch nozzle at 225 pounds pump pressure without submerging. It is about eighteen inches high and floats in such a position that it requires only fifteen inches of space between the water surface and underpinning of the wharf. It has great buoyancy and can be shoved in to places where no small boat can reach. It can be operated with an open butt or with nozzles as desired.

The pontoon can be controlled from a fire boat using boat pumps or from a rowboat using land company lines over the side of a dock. After the pontoon is floated one hoseman can control its movements.

It offers the only effective means of reaching flames under piers at high tide and in cases where the bridges or docks are covered with concrete, or paving stones it eliminates the necessity of ripping up this material to reach the fire.

N. Y. Rescue Squads Co-operate

Co-operation between the two rescue companies of the New York Fire Department and the 21 emergency squads of the New York Police Department has been effected after three years. In a general order to fire telegraph dispatchers, effective October 31, the Fire Commissioner of New York City directed that in the future when calls for either one of the Fire Department's rescue companies are received from points remote from the stations of the rescue companies, and the call is not for a fire, the fire telegraph dispatcher shall notify the police department to send the nearest police emergency squad.

This is the first concrete or material step taken to co-ordinate the two services which for the past three years had often been in conflict, sometimes to the point of embarrassment. Both services are similarly equipped, excepting for self-contained oxygen masks, which the police emergency trucks do not carry. Moreover the policemen are not nearly as experienced in the knack of rescue operations as the firemen are, but gradually the "cops" are becoming trained in that specialized branch of public activity.

It was said at Fire Headquarters that one of the reasons for co-ordinating the two services, was the hazardous traffic situation in the metropolis. It was dangerous enough for fire department rescue companies to make runs of several miles, but it was doubly so to make such long runs needlessly, with police emergency crews just "around the corner" and not called into action.

It took the New York Fire Department twelve years to acquire its second rescue company. This was accomplished three years ago. The latter is located in Brooklyn headquarters in Jay Street. Rescue Co. No. 1 is in Spring Street near the Holland Tunnel. Six years ago the then Police Commissioner Richard E. Enright organized the first three police emergency squads. Three successive police commissioners augmented this service now and then. Police Commissioner Grover A. Whalen, two years ago, completed the job by building up the service to 21 trucks, each located in an inspection district. This great achievement permitted Mr. Whalen to abolish for all time the most distasteful part of a policeman's job in New York—reserve duty. The public guardians had been trying for many years to eliminate "reserve duty" and Whalen did it by establishing emergency crews to speed in fast trucks instead of having infantry reserve by precincts. Mr. Whalen will forever be enshrined in the hearts of the New York police for this progressive step.

For a few years Police and Fire Department emergency crews often met on the same ground and "feeling" was tense. The cops were "green" and the more superior and experienced firemen used to take the attitude—"well, when you 'guys' back out we'll go in." This atmosphere was partially dispelled by Chief Kenlon who invited members of the police emergency squads to attend for thirty days in their turn, the fire rescue company stations and to roll with the firemen and see how things were done. It helped considerably.

Now the policemen are going to respond to everything where there is no fire involved. It will be interesting to watch the outcome, for after all, the police emergency squads were primarily organized for riot, reserve, panic and general emergencies, rather than for ammonia leaks, torch burning, elevator accidents and kindred mishaps requiring the dexterous skill of special tools, equipment and experience.

WM. JEROME DALY.

Questions and Answers—Testing Ladders

(*Continued from page 972*)

Other data on these tests are shown in Fig. 5.

Testing 20 to 28-Foot Ladders

While the New York Fire Department permits only two men on ladders between 20 and 30 feet in length, which in test would mean 4 x 175, or 700 pounds, the relative proposition of ladders of this size as compared with the larger sizes would permit a little greater weight. A test load of

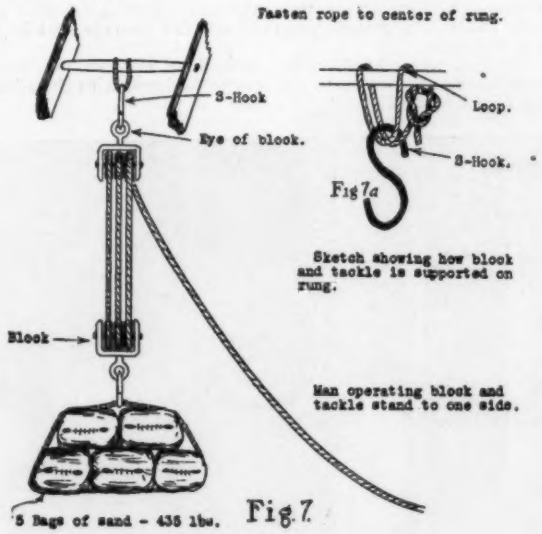

Fasten rope to center of rung.
S-Hook
Eye of block.
Loop.
S-Hook.
Fig 7a
Sketch showing how block and tackle is supported on rung.
Block
Man operating block and tackle stand to one side.
5 Bags of sand - 435 lbs.

Fig. 7

5 men is therefore suggested for ladders from 20 to 28 feet in length.

Fig. 6 shows the placement of these ladders during test.

The following table gives the rungs to which loads should be attached:

Length of ladder	Rungs to which loads are attached
20 ft.	6, 8, 10, 12 and 14
22 ft.	6, 8, 10, 13 and 16
24 ft.	6, 8, 10, 13 and 16
25 ft.	6, 9, 11, 14 and 17
28 ft.	6, 9, 13, 17 and 21

Straight ladders under 20 feet in length, are tested under 4 loads of 175 pounds each (equivalent to a total of 4 men).

Extension ladders under 20 ft. (18-ft., 16-ft., or 12-ft.) are tested under three 175-pound loads (equivalent to three men).

The placement of loads on these ladders is similar to those previously described.

Testing Rungs

The testing of ladders does not end with the determination of their ability to carry load. The rungs, too, should be submitted to as thorough a test.

The rung of a ladder may be subjected in service to the combined weight of a fireman and a person being rescued. Assuming the weight of each is 175 pounds, the total load on the rung would be 350 pounds. An allowance of 100 pounds should be made as a safety factor, making the total load to which the rung is subjected, 450 pounds.

The usual method of performing this test is shown in Fig. 7.

A block and tackle, using quarter-inch or half-inch rope, will answer the purpose. For the load, the five bags of sand used in the previous tests can be employed. The five sacks will, however, give 435 pounds instead of 450 pounds.

The five sacks are roped securely together. The two ends of a piece of rope 4 feet long are tied securely together to form a loop. This loop, together with an "S" hook, comprise the method of supporting the load on the rung, as shown in Fig. 7a.

The hook on one of the blocks (of the block and tackle) is attached to the "S" hook and loop of the rope at the center of a rung to be tested. The pull rope of the tackle is then played in until the lower block is sufficiently low to hook to the ropes binding the bags of sand. When these bags are hooked on, the tackle is operated until the bags are clear of the ground. If it is desired to make the test a little more severe, the bags can be swung from side to side to prove a moving load such as is encountered in actual service.

Each rung should be tested in a similar manner.

The above method avoids unnecessary risk to the men carrying on the tests.

Booster Pump Saves New Building

During the construction of the Ohio Telephone Building in Dayton, Ohio, a riveter missed a heated rivet and it fell on some inflammable material on the sixth floor. Through the use of a Delco automatic water unit, which is designed to work under fifty pounds pressure, the fire damage was kept to a minimum.

The unit was placed on the sixth floor and but two connections were necessary to put it into the lines, with the addition of a check valve.

Booster Unit Placed in Ohio Telephone Building

The booster units are common in tall buildings. When the water in the city mains drops below standard, the pump starts operating. The check valve prevents the building's pressure unit from throwing its water back into the city mains. When the city water system is functioning properly, the water unit is inactive.

RAIN HALTS PLANS IN N. Y. TO OFFSET ELECTION BONFIRES

Continual Downpour of Rain Prevented City from Giving New Scheme Its First Test—Personnel Increased by 1,800 Men

By WILLIAM JEROME DALY

RAIN, incessantly from midday to the early morning hours of the next day, reduced the customary number of Election Day fires in New York City to a negligible degree. The weather defeated the first test of a new plan for coping with the annual Election Night bonfire nuisance.

Battalion Chief Charles W. Rankin, of the Headquarters Staff, and Chief Val. Fendrich, of the Bureau of Fire Alarm Telegraph, had developed a plan for increasing the personnel of the New York Fire Department on that night by 1,800 men and 120 fire fighting units for a period of six hours. All fire companies equipped with pumping engine and hose wagon were divided into two separate units for an emergency period from 5:30 to 11 p. m.

The two platoon system was suspended six hours, giving the department approximately 1,800 additional firemen on duty. All firemen due to leave their stations at 6 o'clock Election Night remained on duty until 11 p. m., and those due to report for duty at 6 o'clock reported at 5 o'clock.

At 5:30 p. m., a special signal "4-4-4" was transmitted over all fire alarm telegraph circuits. Then all fire companies comprising pumping engine and hose wagon were split into two separate fire fighting units, each manned by a full platoon. To all alarms for bonfires, the hose wagon only was scheduled to respond. It was dispatched by telephone. It was planned not to use the fire alarm telegraph for bonfire calls. Alarms transmitted by telegraph were responded to by pumpers only.

When the emergency signal "4-4-4" was sounded at 5:30 p. m., eleven hose wagons of fire companies in neighborhoods where there were not so many Election Night fires expected were located in other sections of the city where Election Night fires were usually numerous. This strategic step, in addition to the splitting up of the two-piece fire companies, had the effect of creating 120 additional fire fighting units.

At 11 p. m., the emergency signal was repeated and the force of men and apparatus was automatically restored to normal. Where three or more engine companies and two hook and ladder trucks ordinarily were assigned to respond to an alarm, only two engine companies and one hook and ladder company responded between 5:30 and 11 p. m. During the emergency period all Deputy Chiefs and Water Towers were relieved from responding on the first alarm, but were held in reserve.

To keep in step with the customary avalanche of Election Night fire alarms, all fire alarm signals ordinarily transmitted twice were sounded but once to keep the circuits clear as possible for signals for fires other than the mischevious brand. This was intended to materially facilitate the labors of the fire alarm key men.

Every available fire telegraph dispatcher and telephone operator was on duty. Additional telephone facilities were installed in each of the fire alarm central stations in the five boroughs.

For many years, especially when local political enthusiasm runs high, Election Night fire alarm box pulling as a form of merriment has congested the fire alarm telegraph circuits to the danger point and often caused large areas to be uncovered for too long a time. The brunt of the bonfire form of public celebration falls as heavily on the fire alarm code men as it does on the firemen themselves.

New Buffalo, Mich., to Receive Apparatus—The township of New Buffalo, Mich., has ordered a Boyer 500-gallon pumper.

Pumper Delivered to Clarion, Wis.—A 500-gallon Pirsch pumper has been delivered to Clarion, Wis. It is equipped with two 70-gallon tanks and a number of extension ladders.

Gieselman New Chief of Syracuse, N. Y.

Chief Eugene F. Sullivan of Syracuse, N. Y., having reached the retirement age of sixty-five, was relieved of duty as head of the Fire Department after forty-five years' service. He was succeeded by Edward W. Gieselman, who was advanced from the post of First Assistant Chief.

Chief Edward W. Gieselman

The office of Chief Gieselman was literally banked with flowers sent by his many friends. A handsome diamond studded gold badge was presented to him by members of the department. In a short address, Mayor R. B. Marvin congratulated the new chief and wished him success. He also spoke of the long years of faithful service performed by Chief Sullivan.

The appointment of Chief Gieselman is a very popular one with the city-at-large as well as with the Fire Department.

He was appointed a fireman in January, 1899, and was promoted to lieutenant in March, 1910. In December, 1913, he was advanced to captain and to district chief in July, 1917. Mr. Gieselman was made second assistant chief in November, 1927, and first assistant chief in April, 1929. He has served the department for nearly thirty-two years.

Chief Gieselman is fifty-four years old, married, and has two sons and a daughter.

Chief B. F. Shely, of Lexington, Dead

B. F. Shely, head of the Fire Department in Lexington, Ky., died at his home at the age of fifty-six. He had been unable to be on duty since last April. He was granted a leave of absence to go to Martinsville, Ind., for treatment. When he returned home he continued treatment for several weeks at St. Joseph's Hospital. For the last three months he was confined to his bed at home.

Chief Shely was born in Hickory County, Mo. He came to Lexington when he was thirty-six years old. He served as Assistant Chief for twelve years and then was promoted to head of the department June 28, 1928, to succeed Chief William A. Jesse, who resigned.

Chief Shely is survived by his wife and one son, one brother and three sisters. During his illness, First Assistant Chief Charles J. Henry served as acting chief. He was appointed head of the department to succeed the late Chief Shely.

Maine Chiefs Meet in Portland

Thirty-five chiefs from various parts of Maine assembled in the Central Fire Station, Portland, for the eighteenth annual convention of the Maine Association of Fire Chiefs.

Franklin H. Wentworth, Managing Director of the National Fire Protection Association, spoke on the advisability of adopting a modern arson law. Chief Charles O. Spear, Jr., South Portland, read a paper on the "Storage, Handling, and Sale of Inflammable Fluids." He also spoke on the traffic conditions that are encountered by the fire chief.

Chief Charles E. Fortin of Lewiston spoke on "Suggested Changes in State Law Relevant to False Alarms for Fire." His other paper was on "Making Municipalities Liable Instead of the Individual in Cases of Accidents Between Individuals and Fire Apparatus Driver."

Chief William S. Mason of Bangor, President of the association, expressed the belief that Maine should have a fire marshal and he also spoke of insurance matters. Chief Giles Frost of Norway talked on portable pumps that are used in fighting forest fires.

The convention ended with a banquet at the Eastland Hotel. The association decided to meet four times every year, on the second Tuesday of January, March, June and September. Next January's meeting will be omitted but the March 1931 meeting will be held in Biddeford, the June meeting at Boothbay Harbor and the September meeting in Norway.

Officers of the association are Chiefs W. S. Mason, Bangor, President; Giles F. Frost, Norway, Vice-President; Charles W. Bowker, South Paris, Secretary-Treasurer, and a Board of Directors consisting of Oliver T. Sanborn, Portland, Charles E. Fortin, Lewiston, Charles O. Spear, Jr., South Portland, Walter E. Hogan, Orono, and Irving T. Doyle, Brewer.

Carelessness Cause of Wisconsin Fires

In a radio talk over WHA, Duane H. Kipp of the Wisconsin Conservation Commission stated that ninety-nine per cent of the Wisconsin forest fires are caused by human carelessness. He said:

"Wisconsin's extreme fire hazard in a normal year comes in the month of May and again in the month of October, when the great proportion of all fires which occur are reported. This year fires have been burning in Wisconsin forests and marshes almost continuously since last February, when the first was reported. Some of the peat fires are still burning in spite of the heavy rains and these will continue to burn until snow time. Some peat fires may even burn throughout the winter, as they burn deep into the ground below the easy penetration point of rain."

West Plains Active in Fire Prevention

Under the direction of Chief Gus Joliff, the Fire Department of West Plains, Mo., has been very active during Fire Prevention Week. The Firemen made a tour of inspection of the business houses of the city to locate potential fire hazards. After each inspection, the owner was given a blank on which were listed the various hazards found.

The department is also active in first aid work. The men receive training in this work once each week. A first aid crew has been organized.

Gardner Heads Kansas City Patrol

William H. Gardner, for twelve years a member of the Kansas City, Mo., Underwriters' Fire Patrol, has been named head of the patrol to succeed Chief John C. Egner, who has been retired. Chief Gardner has an interesting record.

From 1908 to 1909 he served as fire and police reporter for the *Kansas City Star*. He served as inspector in the Fire Prevention Bureau of the Kansas City Fire Department from June, 1910, to September, 1919. He joined the Fire Patrol on September 30, 1919, and on February 27, 1923, was promoted to Acting Assistant Chief of the patrol and Secretary of that organization. On December 1, 1926, Mr. Gardner was promoted to Second Assistant Chief of Patrols. Three years later he was advanced to First Assistant Chief.

Chief Gardner is forty-one years old. He is married and has two children, a girl sixteen years old and a boy five years old.

Chief William H. Gardner

The Kansas City Patrol consists of three companies. It has a membership of thirty men and operates under supervision of the National Board of Fire Underwriters. The Kansas City organization owns its own station properties.

Following a survey of the local fire patrol by Chief Frank C. McAuliffe of Chicago, the local board of control at Kansas City started a reorganization of the department. Chief Egner, sixty-nine years old, Assistant Chief H. P. Frye and Captain James G. Shannon were placed on the retired list.

Site Selected for Buffalo Station—A location has been selected for the new fire station to be erected in Buffalo, N. Y. The proposed building will house the offices of the commissioner and deputies, special apparatus, supply department, mechanical repair department, storage rooms, machine shop, paint shop and so forth.

FIRE PREVENTION ORDINANCE FOR CITIES AND TOWNS

It Establishes Bureau of Fire Prevention—Prescribes Regulations for Hazardous Materials and Processes

(Continued from last issue)

THE following Fire Prevention Ordinance has been prepared by the Engineers of the National Board of Fire Underwriters and is recommended by that organization for adoption by cities and towns. While it is not expected that in all cases smaller cities will find need for an ordinance of such length, it is recommended by the Board that a complete set of regulations be adopted in all cases, for even though there may be no immediate need of regulation of a particular hazard, every growing community is sure to have these hazards introduced sooner or later, and it is better to be prepared for them than to develop unrestricted and then try to regulate them. The ordinance will be published in its entirety serially in FIRE ENGINEERING. *Following is a continuation of Part 9—Flammable Liquids:*

913. *Storage Limited in Frame and Other Buildings Not so Used on (Date of enactment of ordinance).*

The storage of flammable liquids inside buildings except in buildings so used (on date of enactment of ordinance) shall be as given under the following sub-sections: Provided that in a special storage room or fire-resistive building, conforming to requirements given in Section 915, an unlimited quantity may be maintained therein, except of Class I liquids:

(a) Within the limits given in Section 951.

In frame buildings:

Classes I and II prohibited.

Class III. Maximum limit of any tank or container 60 gallons, except as permitted in Section 960.

In other than frame buildings:

Class I. In sealed containers or safety cans of not more than 1 gallon capacity, and not exceeding a total of 10 gallons.

Class II. In sealed containers or safety cans of not more than 5 gallons capacity and in barrels, drums or tanks of not more than 60 gallons capacity (total quantity stored in this matter unlimited).

Class III. In sealed containers of not more than 5 gallons capacity, in barrels and drums and in tanks not exceeding 120 gallons capacity, except as permitted in Section 960 (total quantity stored in this matter unlimited).

(b) Outside the limits given in Section 951.

In frame buildings:

Class I. In sealed containers or safety cans of not more than 1 gallon capacity, and not exceeding a total of 10 gallons.

Class II. In sealed containers of not more than 5 gallons capacity and in barrels, drums or tanks not exceeding 60 gallons capacity (total quantity stored in this manner unlimited).

Class III. In sealed containers not exceeding 5 gallons capacity, in barrels and drums and in tanks not exceeding 120 gallons capacity, except as permitted in Section 960 (total quantity stored in this manner unlimited).

In other than frame buildings:

Class I. Not exceeding 50 gallons in sealed containers or safety cans of not more than 1 gallon capacity.

Class II. In sealed containers or safety cans of not more than 5 gallons capacity, in drums and barrels and in tanks not exceeding 120 gallons capacity (total quantity stored in this matter unlimited).

Class III. In sealed containers, drums and barrels and in tanks not exceeding 240 gallons capacity, except as permitted in Section 960 (total quantity stored in this manner unlimited).

914. *Storage Restrictions for Buildings Used for Storage on (Date of enactment of ordinance).*

In buildings now used for storage of flammable liquids, the storage (except in special rooms as given in Section 915) shall not exceed double the quantity specified in Section 913. (Capacity of Individual tanks or containers may be double that specified in Section 913).

915. *Special Storage Rooms or Buildings.*

Special rooms or buildings for storage of flammable liquids and the handling and use of flammable liquids shall, where called for by other sections of this ordinance, be constructed as follows; provided however that when in the opinion of the Chief of the Bureau of Fire Prevention the extent of the hazard formed is more than moderate, based upon a consideration of the quantity and nature of flammable liquids involved and the extent of mixing operations together with the character of construction, of the building in which the proposed storage and mixing operations are to be located, and of exposed buildings, construction affording a greater degree of protection shall be required.

Walls shall be of a construction which will afford at least one hour protection when classified in accordance with the standard fire test specifications; they shall be continuous from floor to ceiling and shall be securely anchored.

The following types of construction will be acceptable:

Metal lath encased in solid cement or gypsum plaster not less than 2½ inches thick.

Gypsum or cement plaster at least ¾-inch thick on metal lath on each side of stud partitions.

Tile, gypsum or concrete block (cement plaster on each side to a thickness of ¾-inch).

Ceiling shall be of construction equivalent to not less than ¾-inch of cement or gypsum plaster on metal lath.

Floors if of wood should be protected with not less than 2 inches of concrete. If situated over damageable materials or products, floors should be waterproofed and provisions made for drainage to a safe place.

Door openings to other rooms or buildings shall be provided with non-combustible sills raised 6 inches. Such openings shall be protected by standard Class C fire doors of approved automatic or self-closing type.

Where other portions of the building or other properties are exposed, windows shall be protected in a standard manner.

Shelving shall be non-combustible.

916. *Storage of Class I Liquids.*

Except where kept in sealed containers, Class I Liquids shall be kept in storage tanks underground or outside the building and no discharge system shall have outlet inside building unless in a special room in accordance with Section 915. Safety cans of not over ten gallons capacity may be used in any part of buildings except that if of over one gallon capacity, they shall be kept and used in special rooms in accordance with Section 915.

In garages and manufacturing plants the Chief of the Bureau of Fire Prevention may permit the storage of Class I liquids in approved portable wheeled tanks, where the nature of the business requires such storage and the discharge therefrom.

917. *Storage of Class II Liquids.*

No container containing Class II liquids, of over five gallons capacity, may be used to fill other containers and appliances unless outside the building or in a special room in accordance with Section 915, and all drawing, except from safety cans, shall, where the nature of the liquid permits, be as provided for in Sections 981 and 982.

918. *Exposed Windows Must Have Wired Glass.*

Any building, other than a frame building, within the limits given in Section 951, containing more than 500 gallons of flammable liquids in other than sealed containers, shall have all windows in side and rear walls and above the first floor on street fronts, exposed by other buildings within fifty feet, provided with wired glass in metallic sash and frame.

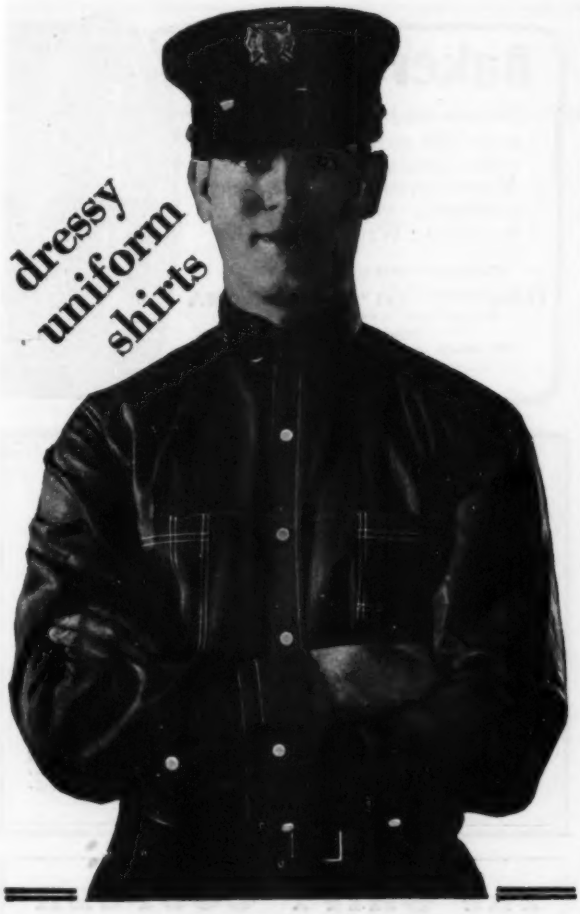
919. *New Manufacturing Plants.*

Any manufacturing plant established after (date of enactment of ordinance) in a building in which persons are employed above the second story, shall have all rooms, in which Class I and II liquids are mixed or stored in receptacles permitting the escape of vapor, constructed in accordance with Section 915

(To be continued)

New Station Opened in West Allis, Wis.—A new fire station costing $50,000 has been opened in West Allis, Wis.

Jamestown, N. Y., Fireman Overcome by Smoke—A member of the Jamestown, N. Y., Fire Department died in a local hospital five hours after he had been overcome by smoke at a small fire in the basement of a newspaper. Artificial respiration methods were used and two tanks of oxygen administered. The victim had returned to duty only two weeks previous, after being overcome by fumes at another fire.



IN Signal Uniform Shirts you get the cut, fit, and fine dependable workmanship that you ordinarily associate only with dress shirts. The shirt shown is No. 25, made of dark blue TubTesT Percale with two detachable laundered collars to match.

You are not limited to one pattern or style — there is a wide variety in Signals, including collar-attached styles. You can depend on Signal quality — long wearing fast color fabrics, good, comfortable fit, and really dressy appearance. We'll gladly send you samples and full particulars on request.

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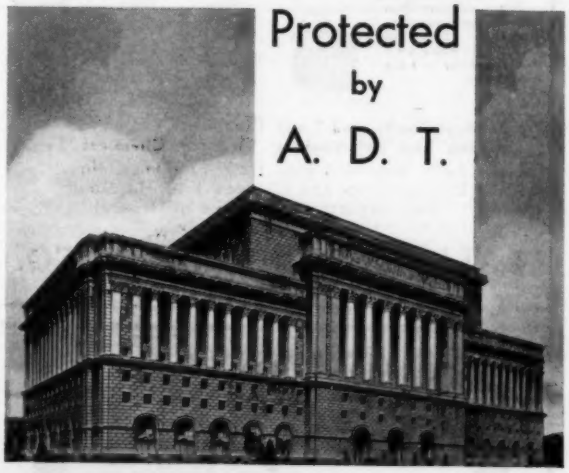
Valuable Properties Protected by A. D. T.



NEW $7,000,000 Milwaukee County Court House now under construction—will be a landmark of modern protection — A.D.T. Protection.

A typical scene in an A.D.T. Central Station where coded fire alarm signals are received and transmitted immediately to the fire department.

The Milwaukee County Court House is just *one* example of complete protection against fire. Throughout the country. A.D.T. Systems of property protection have materially reduced "loss by fire" on properties totalling a value of $22,300,000,000.

Prompt response of the fire department—due to prompt notification of fire by A. D. T.—helps to make A. D. T. protected properties 99-96/100% IMMUNE from fire losses. A. D. T. Central Station Systems also maintain a constant check on watchmen's activities.

A. D. T. Fire Alarm, Watchman's Supervisory and Sprinkler Supervisory Services are serving over 240 communities from coast to coast. Recommend A. D. T. . . . to increase your own fire fighting efficiency.

Controlled Companies of
American District Telegraph Company
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Novo Acid Jars & Holders

of every description stronger than lead and non-corrosive. Used by departments throughout the country.

Chemical Tanks and Lally Quick Opening and Self-packing Top for Chemical Tanks

Lally Improved Fire Hose Couplings, Fire Extinguishers and Charges, Fire Hose and Fire Department Supplies in General

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Woven and lined to flatten and fold easier, closer and with least injurious effects. Mass-woven to combine maximum strength with flexibility. Write for details.

MANUFACTURED EXCLUSIVELY BY

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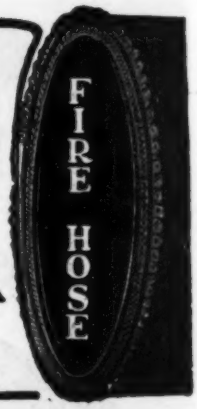
"Territories Available"



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Are given preference by so many fire protection and water works men because they know that more than half a century of experience go into their manufacture and they embody valuable and exclusive features.

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THE BI-LATERAL FIRE HOSE CO.

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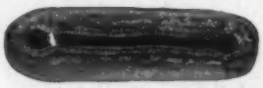

If you purchase BI-LATERAL FIRE HOSE it will increase the value of your hose-carrying apparatus more than the cost of the load of Bi-Lateral Fire Hose.

We can load from 25% to 33% more and when coupled with rocker lug couplings the Bi-Lateral hose makes an apparatus one to be proud of and as near perfect as possible to do quick and efficient service.

Fire Alarm Signals
Water Meters
Compounding Valves
Stops
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Presses for Lining Service Pipe with Cement

Union Water Meter Co., Worcester, Mass.

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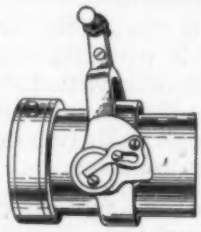

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Any size hard suction

Years of Service Prove it the Best

National Standard Threadless Coupling Corp.

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Write for Chiefs' Testimonials On

The Smith
INDIAN
Fire Pump

WE'LL gladly send you copies of letters from chiefs who strongly recommend this portable, 5 gal. extinguisher. Excellent for fighting grass, brush, awning and roof fires. Uses only clear water. Carrying rack clamps right on truck.

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A WORD TO OUR ADVERTISERS

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Remember that you are not getting full value from your advertising unless you make it interesting, or give us the opportunity to do it for you. Think it over—and send us some new material.

THE PUBLISHERS.

FIRE DEPARTMENT ACTIVITIES

Ventura, Cal., Wants Pumper—Ventura, Cal., is considering the purchase of a 1,000-gallon pumper.

Clifton, N. J., to Erect Fire House—Bids were received for the construction of a fire house in the Richfield section of Clifton, N. J., estimated to cost $55,000.

Fire Station Opened in Middle Village—A new fire station has been opened in Middle Village, L. I. An engine and a ladder company will be housed in the new building.

Apparatus Delivered to Newton, Ia.—Seagrave apparatus has been delivered to Newton, Ia., equipped with a booster tank and foam equipment.

Rochelle, Ill., May Buy Apparatus—A canvass is being made of the farmers in the vicinity of Rochelle, Ill., to raise funds for the purchase of fire apparatus.

Fire School Opened in Glendale, Cal.—Frank Thomas, drillmaster, is in charge of the fire school that opened in the Central Fire Station in Glendale, Cal.

Spokane May Buy Ladder Truck—Spokane, Wash., is contemplating the purchase of an aerial ladder to replace one in use at No. 5 station that has been in use since 1911.

Canton, Ohio, to Erect More Stations—Two new fire houses of early Colonial architecture will be erected in Canton, Ohio. The apparatus will be housed in camouflaged carriage sheds.

Fire Marshal Rules Against Indoor Golf—John W. Reth, State Fire Marshal of Massachusetts has ruled against miniature golf courses in garages because of the fire hazard and danger to human life.

New Fire-Fighting Group Planned—Plans have been made for a firemen's organization for the southern part of St. Louis County, Minn. It is hoped to form an organization that will be able to protect the district.

Cheney Seeks More Members—The Cheney, Wash., Fire Department is seeking more members. Dues will be collected from all members and two dollars will be paid to each member who reports at a fire.

New Fire Station Considered at Oroville—The City Council of Oroville, Cal., is considering the erection of a new fire station. The present station is inadequate for the apparatus purchased during the past year.

Sentenced to Die for Arson Activities—The St. Louis court has sentenced a man to death by hanging for conviction of setting fire to the Buckingham Hotel Annex in 1927. Seven persons perished in the fire.

Haverhill Firemen Repairing Toys—Firemen of the Essex Street station, Haverhill, Mass., have already started on their annual labor of repairing toys to be given as Christmas presents to youngsters from the tenement districts.

Chief Mertz of Akron, O., Dead—Chief John T. Mertz died shortly after midnight on November 3 at the City Hospital, where he had been operated for a bladder disorder. He was sixty-six years old. Chief Mertz was head of the fire department for thirty years.

Chatham Has Long Period Without Fire—Chatham, N. J., has established a record of which it is proud. Since May 10, 1929, no fire was reported until October 23, 1930. Chatham is a town of about 5,000 population and it covers an area of approximately four square miles.

Fire Marshal Sues for Pension—John Matthews had served River Forest, Ill., for forty years and he was discharged as fire marshal May 1, 1929. He is now suing the municipality to provide a firemen's pension fund as provided for in the state code.

School Fire Department Formed in Spokane—A student fire department was formed at the Libby Junior High School in Spokane, Wash. The student-chief received a fire marshal's badge and fire badges were given to nine other members of the department.

Stints on Apparatus—Town Suffers From Fire—Residents of Williamsburg, Ohio, recently voted down a bond issue to purchase fire apparatus. Fire almost swept the entire business district on October 22 and caused damage estimated at $100,000.

Chief Scott to Make Survey in Venice—Chief Ralph J. Scott was instructed to make a study of fire conditions in Venice, Cal., to decide on the installation of a salt water pipe line for use of the Fire Department in fighting fires in the oil district.

Old Badges Used as Grave Markers—The Fire Bureau of Portland, Ore., has collected all the old time badges and the material is being melted and cast into markers for firemen's graves. The markers are in the form of a Maltese cross about eight inches in diameter.

Sonora, Cal., Receives New Apparatus—A new piece of apparatus has been added to the state forestry force. The new equipment has been delivered to Sonora, Cal., for use in fighting forest fires in Tuolumne County. There are now nine pieces of apparatus for fighting such fires.

Dubuque, Ia., to Have Old Company Function—Fire Company No. 2, Dubuque, Ia., that disbanded a year ago has been placed back into service and is housed at fire headquarters. The company was disbanded when it was found that the apparatus was in poor condition.

Ft. Edwards Planning New Fire Alarm System—A survey has been made of Ft. Edwards, N. Y., to determine plans for a new fire alarm system. The matter of financing the contemplated improvement will be decided at a coming election.

Fire Station to Be Erected at Linda Vista, Cal.—Plans for a new Spanish type fire station have been approved. The building will be one story in height with a stucco exterior and tile roof. The main entrance is to have doors ten feet wide. The station will contain an apparatus room, office, dormitory, locker room, bath room, service room, and so forth.

Portland Asks for Exemption in Tire Rule—Chief Grenfell of Portland, Ore., has made application for exemption from the state law requiring pneumatic tires on motor vehicles. Under a recent statute all vehicles must be so equipped by July, 1931, but there is no provision in the city budget for financing the tire change.

Three More Pumpers for Long Island—The Woodhouse Manufacturing Company, New York City, has closed contracts for Ford booster pumping apparatus built by the Combination Ladder Company for Oakdale, L. I., and East Northport, L. I., and for a 500-gallon Hahn pumper for Kings Park, L. I.

Legion Men Buy State Apparatus—Through efforts of the American Legion post in Sonora, Cal., the state forestry department has purchased a tank truck for use in Tuolumne County. The post contributed $3,200 towards the purchase of apparatus, the county $1,000 and the state $800. The apparatus carries 1,750 feet of hose and equipment for fifty fire-fighters.

Milwaukee Views Fire Department Films—Two motion pictures, "The Salvage Man," and "The Inspector," were exhibited to members of the Milwaukee Fire Department. Chief Peter Steinkellner explained that it was part of the Education Program adopted at the last convention of the International Association of Fire Chiefs at Winnipeg, Canada. He is going to get an additional instructor for the fire department.

Three Units Delivered to Everett, Mass.—A parade was held on October 18 to celebrate the arrival of three new pieces of fire apparatus. The apparatus in line included the handtub "General Taylor," owned by the Everett Veteran Firemen's Association, an old steam fire engine loaned by Waltham, and Everett apparatus headed by Chief Philip A. Ham and the band of the Metropolitan Firemen's Post of the American Legion. The new apparatus consists of two 1,000-gallon Seagrave pumpers and a 75-foot Seagrave aerial ladder.

Honor Deputy Chief of Utica—Deputy Chief William F. Dacey, of the Utica, N. Y., Fire Department, was presented with an easy chair, a reading lamp and a smoking cabinet by his associates in the department on the occasion of the celebration of the fifty-sixth anniversary of his appointment as a fireman. The presentation took place at the Central Fire Station of Utica, on October 4, and was made by Commissioner of Public Safety I. C. Flint. The chief is still taking his turns in answering alarms and is physically and mentally alert, in spite of his 77 years.

PROPOSED IMPROVEMENTS

Marshall, Wis.—Plans are being made to raise funds for purchase of a fire truck for protection of village and Medina township.

Two Rivers, Wis.—Fire Chief Arthur Rahn recommended the purchase of new fire equipment and additional firemen for the local department, according to reports.

Fall River, Mass.—City Council authorized expenditure of $100,000 for construction of the new fire station at Bedford and Troy streets.

Newport, R. I.—Board of Aldermen went on record as favoring a $150,000 bond issue for construction of new central fire station in the near future, according to reports.

Pelly, Tex.—City Council contemplating the purchase of a new fire truck for the department, according to reports.

Audubon, Iowa—Audubon Post of the American Legion to sponsor a movement to provide for a fire truck to be used for rural protection.

Westbrook, Minn.—At meeting of local fire department it was voted to purchase a new piece of fire apparatus, according to reports.

Worcester, Mass.—Reports state Mayor O'Hara interested in purchase of new fire apparatus.

Steubenville, Ohio—City Council considering necessity of procuring more adequate fire protection for the south end of the city and the erection of a new fire station to replace the present Phoenix fire station on Market Square.

Logan, Utah—Mayor A. G. Lundstrom, and Fire Chief C. W. Rapp recommended to County Commissioners the purchase of a new light truck for rural fire protection.

Woodstock, Ohio—A new fire department was organized to be known as the Woodstock Community Fire Co. with C. K. Lincoln as president. Funds are to be raised for purchase of apparatus.

Wanted

A capable sales representative for established Fire Apparatus House in Canada. Must be experienced selling motor apparatus and have clean successful record. Give full particulars. BICKLE FIRE ENGINES LIMITED, Woodstock, Ontario. 11-12.

W. S. English With Gamewell Co.

W. S. English, who has been working in the municipal field for the past seven years, during which time he has made the acquaintance of many fire chiefs, particularly in Pennsylvania, has been appointed sales engineer of the Gamewell Company.

W. S. English

Wooden Hotel Destroyed

Two boys, occupants of the Mocksville Hotel in Mocksville, N. C., were badly burned in a fire that destroyed the hotel. They were burned about the face and shoulders as they made their way from the second floor of the blazing building. One of the two is in a critical condition.

Shortly after the guests had retired for the evening, fire was discovered. The flames spread throughout the wooden frame building. The building loss was placed at $20,000.

D. G. SPENCER, JR.

Pumper Delivered to New South Wales

Upon delivery of the new 1,000 Imperial gallons Ahrens-Fox pumper delivered to New South Wales, Australia, officers and men of the various districts were given instruction in its operation. After complete information had been given concerning the pumper, the men assembled were given instruction in the operation of the new aerial ladder. The department intends to form a school and to hold regular class instruction.

MORRIS FOX.

Large Auditorium Burns

The Raleigh Auditorium, with a seating capacity of 3,200, was destroyed by fire on the night of October 24, with an estimated loss of $125,000.

The flames were discovered by negroes who were holding a dance to celebrate the state fair. The blaze was first seen in the top of the building which gave rise to the belief that defective wiring had caused the blaze.

The Raleigh auditorium was part of a large building that also housed Raleigh's city hall and jail. Prisoners were removed to the Wake county jail. The city offices were not damaged.

Sherwood Brockwell, State Fire Marshal, assisted Chief W. E. Hollis in directing the fight of the flames that prevented the destruction of the city offices and nearby buildings.

D. G. SPENCER, JR.

John P. Ahrens Retires

John P. Ahrens, Vice-President and Sales Manager of the Ahrens-Fox Fire Engine Company, since the company was organized in 1904, resigned from that organization on October 28.

John P. Ahrens

Employees of the company presented the retiring official with a number of tokens of their esteem for him, including a bible, diamond cuff links and an engraved cigarette and lighter set.

It is Mr. Ahrens' intention to depart in the near future on an extended trip which he had long hoped to take, but which he had been unable to do because of the demands of business.

His father, Christopher Ahrens, was a pioneer fire apparatus builder. He served for a while at sea and in 1859 went to Cincinnati. His first position was with a fire engine manufacturing company, and ten years later Christopher Ahrens purchased the business. He remained as President of the Ahrens Manufacturing Company until 1895, when he retired. The firm then was incorporated as the Ahrens-Fox Fire Engine Company with Charles H. Fox, his son-in-law, as President and John P. Ahrens as Vice-President. John Ahrens, Jr., remains with the company.

Fire Department and Other Reports

Fire Brigade, Shanghai, China—Report of the Fire Brigade and the Budget; twenty-five pages and cover.

Fire Department, Petaluma, Cal.—Three-page typewritten report of Chief R. S. Adams.

Fire Department, Singapore, Straits Settlement—Annual report of department; five pages and cover.

Fire Marshal, British Columbia—Eighth annual report of the Fire Marshal for the Province of British Columbia, Canada; twenty-four pages and cover.

Fire Department, Seattle, Wash.—Thirty-ninth annual report of the Fire Department; 123 pages and cover.

Institution of Fire Engineers, England—Annual report and proceedings of the Seventh Annual Conference held in Leicester, England; 100 pages, illustrated, and cover.

Bureau of Safety, Panama—Report of the Bureau of Safety, Panama; thirty-one pages, tables and cover. This report is printed both in Spanish and English.

Fire Department, Fitchburg, Mass.—Fifty-seventh annual report of the Fire Department; nineteen pages and cover.

New Mexico State Firemen's Association—Proceedings of the Eighth Annual Convention and the First Annual Fire College, of the New Mexico State Firemen's Association, Deming, N. M.; illustrated, nineteen pages and cover.

Fighting Fire by Modern Methods—A booklet describing some of the modern methods of fighting fires. Issued by the National Board of Fire Underwriters, New York City; illustrated, thirty-six pages and cover.

CONVENTION DATES

November—SONOMA COUNTY FIREMEN'S ASSOCIATION. Annual Convention, Petaluma, Cal.

Nov. 15—KEYSTONE FIRE CHIEFS' ASSOCIATION. 29th Annual Convention, Lancaster, Pa. Charles O. Oyler, Convention Representative, 315 S 14th St., Harrisburg, Pa.

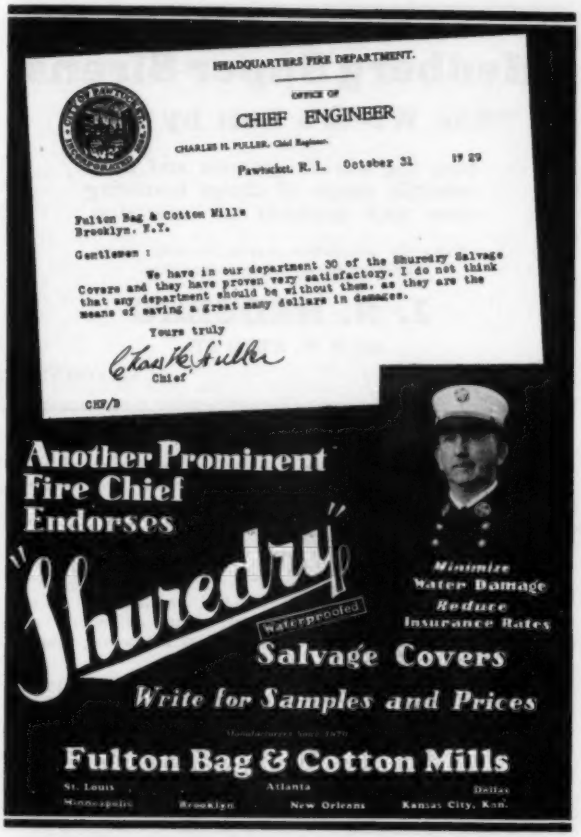
Nov. 19—FIRE CHIEFS' EMERGENCY PLAN OF WESTCHESTER COUNTY. Regular Meeting, Fire Headquarters, White Plains, N. Y. Secretary-Treasurer, E. Riviere, Fire Headquarters, Larchmont, N. Y.

May 11-16, 1931—NATIONAL FIRE PROTECTION ASSOCIATION. 35th Annual Meeting, Toronto, Ont., Can. Managing Director, Franklin H. Wentworth, 60 Batterymarch St., Boston, Mass.

May 21, 1931—IOWA STATE FIRE CHIEFS' ASSOCIATION. Annual Convention, Ames, Iowa. Secretary-Treasurer, Chief L. R. Morris, Ames, Ia.

June 17-20, 1931—WASHINGTON STATE FIREMEN'S ASSOCIATION. 9th Annual Convention, Port Angeles, Wash. Secretary, S. H. Jenkins, Bellimgham, Wash.

July 13-16, 1931—MONTANA STATE FIREMEN'S ASSOCIATION. 40th Annual Convention, and Firemen's Short Course, Bozeman, Mont. Secretary-Treasurer, D. E. Moser, Bozeman.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Yours truly
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Another Prominent Fire Chief Endorses
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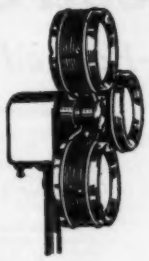

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At night these three revolving red signal lights make identification of the apparatus instantly possible as far as light is visible.

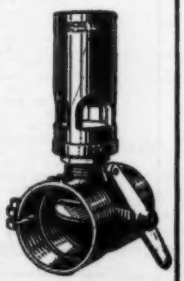
Insist upon having "Roto-Rays" on the next piece of apparatus you buy. It's just as essential as the whistle, the siren or the bell. Easily installed on apparatus now in service.

The Powerful BUCKEYE EXHAUST WHISTLE predominates in over 600 fire departments where serious traffic problems exist.

The shrill blast of a Buckeye Whistle effectively carries far ahead of the apparatus. Its sound is distinctive and extremely penetrating.

"Roto-Rays" and a Buckeye Whistle form the most effective combination of Warning Signals in existence.

Prices and full particulars upon request.



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WARNING SIGNALS THAT WARN

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Write for descriptive matter showing sirens that have never lost in competition.

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The greatest possible capacity per horse power.
It has won out over others in more than one hundred competitive tests.
Protected from birds, storm and sleet.
Runs entirely on ball bearings.
Double tone, (Two sirens in one).

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One big whistle with 1930 improvements throwing the sound equally in all directions.
THE BEST MADE, we leave it up to you, your engineers or any good mechanic, and a test.
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Questions and Answers for Battalion and Deputy Chiefs

A 210 page book, fully illustrated, by Geo. J. Kuss, former Deputy Chief, New York Fire Department, and Fred. Shepperd, Managing Editor of FIRE ENGINEERING.

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When Are Fire Preventive Laws Valid?

(*Continued from page* 962)

the permit and referred the matter to the Board of Adjustment who upheld the decision of the committee.

The owner then appealed to the court contending that a permit once granted and acted upon cannot be revoked, particularly if the owner expends money in good faith relying upon the validity of the permit. However, the court refused to reverse the decision, saying:

"In the present case we consider that in the proceedings before the Board of Adjustment there was no testimony to the effect that the provisions of the ordinance are unreasonable. The presumption is that they are reasonable. . . . There is also a presumption that the action of the Board of Adjustment was right. . . . This Court will not disturb the action of the Board of Adjustment unless its action is shown by evidence to be wrong."

Obviously, testimony indicating that a refusal to issue a permit, or that the act of revoking the same, is unreasonable and oppressive may induce a court to order reissual of the permit.

Generally, however, any person who contests the validity of a restrictive ordinance or a decision relating to a building permit is obligated to prove that it is unreasonable.

For instance, in Concord Company vs. Dowling, 142 Atl. 356, it was shown that the owner of a lot, after consulting with a contractor, applied to the city building inspector for a permit to construct a building. A permit was refused. The owner then applied to the Board of Adjustment for a modification of the building zone ordinance. This request was refused and the owner appealed to the court. After carefully reviewing the facts of the case the court held the owner not entitled to receive his permit, saying:

"We have frequently said that the burden of establishing that a restrictive ordinance is unreasonable is upon the party assailing the validity of the ordinance, and, as there were no facts before the Board indicating in what respect the ordinance was unreasonable, there was no other course for the Board to pursue than to deny the modification of the ordinance."

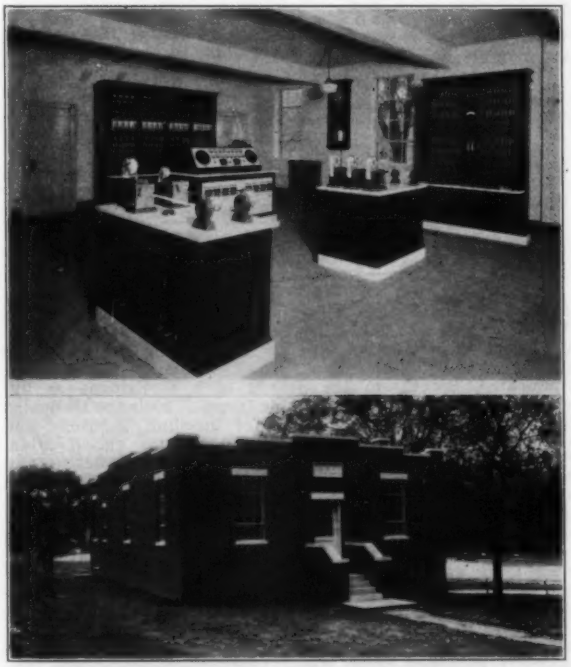
Power of Fire Marshal to Grant Permits

It is important to know that various courts have held that the function of the fire marshal is not the same in proceedings within and without the metropolitan fire district. Within the district, he has to determine whether conditions are such that what may be or become a nuisance if not licensed shall be permitted by license to exist in a particular place; and, further, to decide whether the thing licensed complies with the rules and regulations applicable thereto and established by law with reference to hazards of fire and explosion. He thus acts both as a tribunal to pass upon considerations of public welfare and convenience, and as an administrative officer to pass upon technical compliance with law and the regulations of the department of public welfare. Outside the district, his only duty is as administrative officer. There, the duty of deciding upon the public aspects of the matter is placed by the statutes upon the mayor and aldermen of cities and the selectmen of towns.

For example, in Rawding vs. State Fire Marshal, 172 N. E. 255, it was shown that an oil company requested a permit to erect oil tanks for storage purposes. Certain citizens objected to having the permit issued and offered evidence to show that the granting of the permit and the keeping and storing of petroleum products upon the premises in question would cause irreparable damage to the lands and properties, would decrease real estate values in the vicinity and would pollute the waters and beach adjacent to their estates. However, the fire marshal refused to consider this testimony and ruled that in passing upon the issue of this permit he could consider only evidence bearing upon the fire hazard created. The taxpayers appealed to the higher court, but since the location of the tanks was not within the metropolitan fire district, it was held that such testimony may be excluded. This court said:

"The essential question presented by both is whether certain evidence offered by the plaintiffs at a hearing before the state fire marshal was wrongly excluded. . . . It is manifest, we think, that the permit relates merely to compliance with the departmental requirements to meet the hazards of fire and explosion, while the license deals with the broader questions of public welfare and convenience concerned in the presence of the structures and the business in the community."

On the other hand, the court decided in St. James Building Corporation vs. Commissioner of Public Safety, 157 N. E. 629, that evidence could properly be considered upon application for license to keep, store and sell gasoline, and to erect, maintain and conduct a public garage within the metropolitan fire district, and that the question of fire hazard was *not* the only matter to be determined upon such application. That decision, however, is not controlling when the premises are *not* within the metropolitan fire district.



Fire Alarm Station Completed in Poughkeepsie, N. Y.

Poughkeepsie, N. Y., has a new fire alarm system to serve its fire area of 14,000 acres. The upper photograph shows some of the Gamewell equipment housed in the new building, and the lower photograph is a view of the exterior of the building. The equipment consists of two 10-circuit C. O. Storage Battery Boards, three 4-circuit main line relay boards, one 4-circuit main line alarm, one 16-circuit protector board, one 12-circuit semi-automatic repeater, one fast and slow transformer, one manual transmitting unit, one box line recording set, one primary and secondary recording set, one self winding master clock, one 20-circuit terminal and cross connecting board, 672 cells F. I. P. battery, one motor generator control panel and two motor generator control sets.

Students Turn Hose on Firemen

Members of the Kingston, Ont., Canada, Fire Department and students of Queen's University had a lively clash when firemen came to extinguish a bonfire in full swing on the campus. During the fray, Chief Armstrong was trampled on, and several firemen were injured.

A pile of boxes and old lumber, estimated at forty feet high, was set aflame and it was feared that sparks would fall on the General Hospital and several nearby residences. The students took possession of the hose line laid, and gave the firemen a ducking. The firemen were forced to stand by and watch the fire burn itself out.

Chief Armstrong estimated that a total of $500 damage was done to fire department and personal property of the firemen.

Washington Firemen to Meet in June

The annual convention of the Washington State Firemen's Association will be held in Port Angeles, Wash., June 17-20. Between three and four hundred persons are expected to attend the gathering. A school will be conducted during the first three days and all the entertainment will be scheduled for the last day of the convention.

N. Tarrytown, N. Y., Eliminates Parades—The Board of North Tarrytown, N. Y., has decided that the new fire apparatus will participate in no more parades. The apparatus left the village to join a parade at Hudson, N. Y. One of the local firemen fell off the apparatus and was injured, and the truck was damaged, in returning home.

PERSONAL INJURIES AND DEATHS FROM FIRE SHOWN IN SURVEY

Statistics Giving Casualties from Fire by Location, Age and Sex and Kind of Occupancy—Carelessness Major Cause

THE results of six surveys covering twenty-two states conducted by the Fire Casualty Committee of the National Fire Waste Council is given in the tables which accompany this article. The surveys covered three months each, extending over a period of three years. It was not the purpose of these surveys to tabulate statistics for the entire nation nor even for certain states for the full period of a year. Rather it was the desire of the committee to procure as accurate information as possible with the facilities at hand of deaths and injuries from fire in a predetermined group of states, the population and general characteristics of which were such as to constitute a material and representative sector of the entire nation.

The tabulated statistics shown herein are a consolidated summary of the six surveys revealing fire casualties by location, age and sex, type of occupancy and cause.

It will be noted from Table I that no less than 64% of the deaths and 81% of the injuries reported were among adults. Deaths among children under ten years of age constituted 29.7% of the total, but this class suffered only 11.3% of all injuries which would tend to demonstrate the comparative lack of ability of this class to preserve life once it is threatened. The large proportion of deaths and injuries occurring in buildings of the dwelling class demonstrates forcefully the truth and efficacy of the principle that fire prevention should start at home. Exactly 66% of all deaths reported occurred in dwellings, apartments, hotels, or rooming houses. Improved principles of construction have always been urged for public buildings as a protection against repetition of the holocausts of the past. This is, of course, entirely appropriate, but on the basis of the foregoing statistics it would seem even more essential that these principles be adhered to in buildings occupied as domiciles. This may be impractical or impossible in buildings already erected, but the rigid observation of the principles of carefulness and fire safety in the home is not expensive and for that reason their violation is all the more inexcusable.

In Table II deaths and injuries have been tabulated according to causes, revealing the fact that 89.4% of all deaths and 77.6% of all injuries were caused by actual burns. This item is sub-divided into causes of fire or the material burned. For example, in sub-item 1 buildings, tents, autos, etc., are the objects burned and no attempt has been made to set forth the actual causes of such fires. Sub-item 2 is similar. Sub-items 3 to 9, however, are tabulated on the basis of cause and designate that though the resultant fire may have destroyed any building in which it originated it was communicated directly to the person of a participant or bystander. Sub-item 4, "Flammable liquids," includes all deaths and injuries caused by the use of gasoline, kerosene and other volatile liquids. The division of this classification, "In heating devices," applies specifically to such deaths and injuries as were incurred in attempts to ignite fires with these liquids. Open flame devices referred to in sub-item 5 are primarily fire place. Sub-item 10 "Celebrations" includes all those fires resulting in casualties which were the result of special holiday hazards. A comparatively small number of cases not lending themselves readily to any of the above classifications were assigned to sub-item 11 "Miscellaneous."

Items 2 to 6 are self-explanatory and require no comment other than to point out that though deaths and injuries properly classified under items 2 and 4 sometimes run into large numbers in specific instances, the total is rather small in comparison with the aggregate.

Throughout the course of the survey it was conclusively demonstrated that the underlying cause of the great majority of all deaths and injuries was none other than carelessness. Many specific instances were brought to light, a few of which were unusual and dependent upon a peculiar chain of circumstances to bring about the casualty, but the great majority were repeated instances of violations of the principal tenets of care.—*Fire Prevention Bulletin, Chamber of Commerce of U. S.*

Table I. Fire Casualties by Location, Age and Sex and Type of Occupancy

I. Location

	DEATHS		INJURIES	
	Number	Per Cent	Number	Per Cent
City	1710	65.0	5138	80.1
Country	873	33.2	1205	18.8
Not stated	48	1.8	72	1.1
TOTAL	2631	100.0	6415	100.0

II. Age and Sex

Male Adult	953	36.2	3697	57.6
Female Adult	732	27.8	1544	24.1
Male 10-16	79	3.0	237	3.7
Female 10-16	78	3.0	126	2.0
Child under 10	782	29.7	725	11.3
Male, Age Not Stated	6	.2	72	1.1
Female, Age Not Stated	1	.04	14	.2
TOTAL	2631	100.0	6415	100.0

III. Type of Occupancy Involved

No. Building Involved	224	8.5	818	12.8
Dwelling	1634	62.1	2738	42.7
Apts., Hotels, Rooming House	102	3.9	358	5.6
School, Church, Etc.	10	.4	80	1.2
Theatre, Lodge Room, Etc.	11	.4	74	1.1
Industrial	127	4.9	497	7.7
Mercantile	40	1.5	514	8.0
Office Building	17	.6	80	1.2
Garage	21	.8	222	3.5
Barns and Other Farm Bldgs.	27	1.0	93	1.4
Warehouse	3	.1	34	.5
Lumber Yard	....	....	21	.3
Automobile	116	4.4	334	5.2
Boat	33	1.3	76	1.1
Railway Car	19	.7	36	.6
Miscellaneous	69	2.6	216	3.4
Not Stated	35	1.3	157	2.4
Hospitals, Jails, Etc.	143	5.4	73	1.1
TOTAL	2631	100.0	6415	100.0

Table II. Consolidated Summary of Fire Casualties by Causes

CAUSES	DEATHS Number	DEATHS Per Cent	INJURIES Number	INJURIES Per Cent
I. Burns Causing Casualty				
1. Burning Structures				
Finished buildings	510	19.4	512	8.0
Bldg. construction, tents, etc.	9	.3	21	.3
Autos and other transportation carriers	106	4.0	132	2.1
Total	625	23.7	665	10.4
2. Prairie or Forest Fires	8	.3	17	.3
3. Explosions				
Explosives, fire arms, etc.	32	1.2	113	1.8
Dust explosions	3	.1	13	.2
Mine explosions	2	.1	16	.2
Gas explosions	119	4.5	591	9.2
Others	55	2.1	258	4.0
Total	211	8.0	991	15.4
4. Flammable Liquids				
In lighting devices	47	1.8	115	1.8
In heating devices	381	14.5	749	11.7
In power devices	67	2.5	292	4.6
In cleaning operations	49	1.9	253	3.9
Others	107	4.1	370	5.8
Total	651	24.7	1779	27.7
5. Open Flames	558	21.2	703	11.0
6. Carelessness with Matches	125	4.8	248	3.9
7. Careless Smokers	60	2.3	188	2.9
8. Use of Electrical Equipment	20	.8	93	1.4
9. Use of Fireworks	14	.5	121	1.9
10. Celebrations				
Christmas	3	.1	13	.2
Other holidays	1	.04	9	.1
Others	1	.04	....	....
Total	5	.2	22	.3
11. Miscellaneous	75	2.9	157	2.4
Total—Burns	2352	89.4	4984	77.6
II. Suffocation or Inhalation of Smoke and Gases	199	7.6	360	5.6
III. Exposure from Fire	10	.4	180	2.8
IV. Panic, Jumping from Bldg., Collapse of Bldg., Etc.	22	.8	164	2.6
V. General Accidents				
1. In response to alarms, falling from ladders, etc.	20	.7	393	6.2
2. Other accidents incident to fire	11	.4	275	4.3
3. Traffic accidents due to false alarms	4	.2	28	.4
Total—General Accidents	35	1.3	696	10.9
VI. Shock	13	.5	31	.5
Grand Total	2631	100.0	6415	100.0

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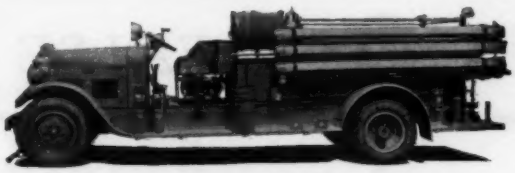

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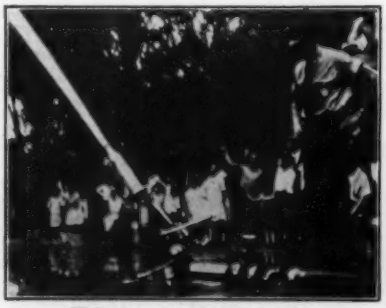

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FALSE ALARMS

What Will the Firemen Do Next?

A golf club has been formed in Cleveland, Ohio, among members of the fire department. A logical move would be to install sirens on the course used so that firemen may know of the outbreak of every major fire.

NO TIME LEFT

The convention of the state association generally drew a large number of chiefs from the rural section who combined business with the annual convention. After the convention, one delegate decided he would go to the big city forty miles away and go places and do things. He registered at a hotel and before going to bed, asked the clerk about hours for dining.

"We have breakfast from 6 to 11, dinner from 11 to 3, and supper from 3 to 8," explained the clerk.

"Well say," remarked the dazed visitor, "What time am I going to get to see the town?"

The beauty of crossing a one-way street is that you know which way you are going to get knocked down.

A DIPLOMAT

This might have happened in Cleveland and then again it might have not. A baffled golfer asked:

"Does anyone ever get out of this bunker?"

"Yes sir," replied the caddie. "They usually just sends the caddie somewhere for something."

And of all the animals that crawl away and sleep for the winter, the one we miss the most is the janitor.

THE END

The Chief and his chauffeur were returning from a fire. The sight of the red painted car coming toward her, and the sound of the bell excited a woman motorist. The automobile she was driving struck a tree. The Chief stopped to see if he could be of any assistance.

"You were kind of rattled. I suppose you are just beginning to drive."

"On the contrary," she remarked as they viewed the wreck; "I have just finished."

There's one good thing about having a Scotch family for neighbors. Take that family upstairs. Like all upstairs families, they like to give parties. But they never keep us awake with their dancing. When we want them to stop dancing we merely turn off our radio.

PLACE, NOT TIME

A mechanic from the fire apparatus factory was sent to make an inspection of the company apparatus in a certain department. When he was through tinkering with the motor housed in an outlying station, he asked:

"Where can you wash here?"

"In the spring," his guide answered.

"I asked you where—not when."

And the height of irony: Being shot in Chicago by a policeman.

THEY FOUND OUT

In an outlying part of the city, a fire station was erected on a large plot of ground. One member to while away the time between alarms had started raising a few chickens. A friend was rather amused at this diversion. When he called a month later he was more surprised at conditions in the back yard.

"I see you don't keep chickens in the back yard any more."

"Yeh. The neighbors got wind of it."

FORCE OF HABIT

A small blaze in the drug store was quickly extinguished by Engine 4 located a few blocks away. The following week a member of the company went into the drug store to have a prescription filled. The fireman felt that the druggist owed an obligation to members of the company, and he, therefore, was very much provoked over the amount charged.

"I say! Haven't you any sense of honor?"

"I am sorry," said the druggist from force of habit. "I have not, but I have something just as good."

CONDITIONS ALTERED

How the thing started, no one knew, but as the boys were idling their time away on the apparatus floor, the talk turned to ancestry and was directed at Mike.

"Anyone could tell by looking at you that your parents came from Ireland," said one.

"My parents did not come from Ireland," replied Mike.

"Come on, don't try to fool us. Your face shows plainly that your parents came from Ireland."

"They did not," said Mike, very much provoked. "They are in Ireland yet."

AIRING HER TROUBLES

An apparatus salesman who has done considerable hob-nobbing with fire chiefs tells the following story.

He took a Chief out to lunch and the best available restaurant was one of the places where hash is an every day item on the menu. A waitress approached for the order.

She said, "I have stewed kidneys, boiled tongue, fried liver and pig's feet."

The Chief stopped his regular conversation long enough to remark, "Don't tell me your troubles, sister, give me a chicken pie."

Courtesy, Collier's Magazine

"John, don't forget to bring home some smoked pork!"

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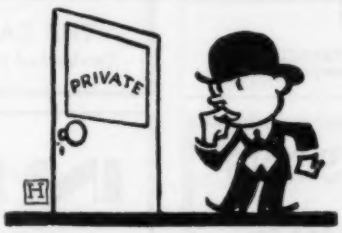

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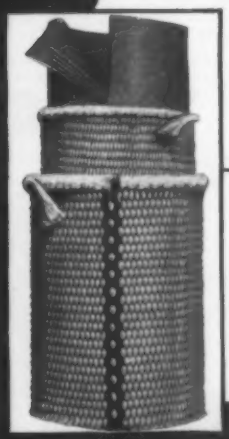

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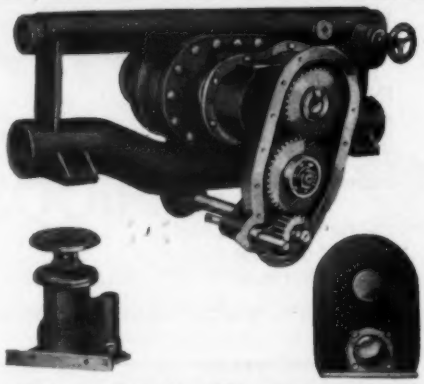

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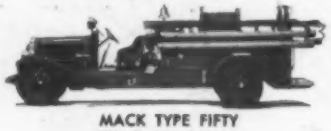

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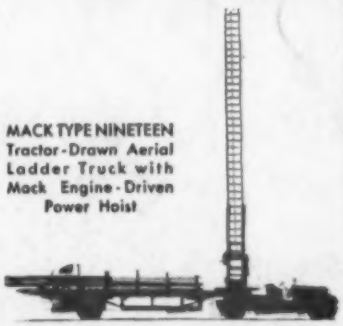

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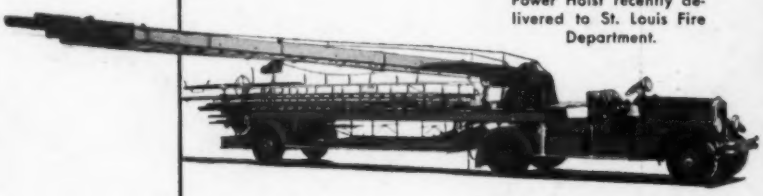

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